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ESTIMATED U.S. PETROLEUM BALANCE

SUMMARY

The year-to-year decline in the level of petroleum products supplied which started in 1979 continued in 1982, though the degree varied substantially between major products. Total domestic petroleum products supplied declined 888 MBD (5.5%). As shown in Exhibit I, the downward trend in gasoline supplied moderated, while levels of distillate and residual fuel oils maintained sizable decline rates.

The long-standing close correspondence between the level of real gross national product and petroleum products supplied was interrupted in the late '70s when oil prices increased substantially. Exhibit II shows that while real GNP was about the same in 1982 as in 1979, the level of domestic petroleum products supplied deteriorated by about 18%.

Supply also continued to decline, though its downward trend was somewhat less drastic than in the past; one of its components, domestic crude oil production, in fact, showed a mildly upward movement. Imports, especially those of crude oil, continued to drift lower, and there was a marked change in their sources. Inventories fell appreciably from abnormally high levels but are fully adequate to meet the lower level of demand. Refinery utilization increased slightly, as capacity in actual operation receded more than a million barrels.

Total energy consumption also continued to decline, falling an estimated 4% below 1981 levels. As measured by the energy/GNP ratio, its use has continued to become more efficient, falling more than 2%, from 49 thousand to 48 thousand Btu per constant 1972 dollar. Distribution between the various major energy sources has also changed. Petroleum, natural gas, and coal all shared in the decline, though coal was the least affected. Nuclear power and hydroelectric power were the only gainers. Exhibit III shows the trend of energy consumption by type between 1975 and that estimated for 1982. Consumption of petroleum has considerably declined since 1979, as has its share of total energy. In 1980 and 1981, the decline in energy consumption was entirely attributable to lower petroleum consumption; in 1982, however, only about half of the total energy decline resulted from a fall in petroleum consumption. Coal recorded increases in its share of total consumption in each of the past three years though, volumetrically, a minor decline was experienced in 1982. While consumption of natural gas has decreased every year since 1979, its share of total energy has not changed markedly.

PRODUCTS SUPPLIED[1/]

For several months during 1982, the level of gasoline supplied was greater than for corresponding prior-year months; this is the first time this has occurred since 1979. As a result of a 6.0% decline in demand in December versus the prior year, the 1982 cumulative monthly decrease in gasoline supplied, which had been running at or below 1% for most of the year, rose to 1.3%. Gasoline pump prices by year-end had declined about 27¢ (20%), adjusted for inflation, since reaching their all-time high in March 1981. At the same time, real disposable personal income continued its upward climb. As Exhibit IV shows, disposable personal income and motor gasoline demand have over the years exhibited a high degree of correspondence, though that relationship was apparently disturbed in the late 1970's by rapidly rising gasoline prices which led to significant decreases in gasoline demand. The sharp increase in gasoline prices, plus the effect of a slow economy, produced a significant change in the composition of new car sales. Since 1976, the composition of annual automobile sales has shifted from 51% standard/intermediate and 49% compact/subcompact to an almost reverse distribution of 38% larger and 62% smaller cars. Imports, mostly smaller cars, included in the compact/subcompact category above, nearly doubled their market share, advancing from 15% to 28%.

Unleaded gasoline's market share showed only marginal improvement in 1982. The little-more-than-two percentage point advance over the prior year is less than half the roughly six percentage point annual advance that had been the prior norm. A tepid economy that slowed new car sales in 1982 to the lowest level since 1961 is thought to be a major reason for the slowdown in unleaded's growth.

Distillate supplied levels continued to fall and posted a 150 MBD (5.3%) decrease for the year as a whole. Total distillates supplied, in the past partly insulated from the effects of economic downturns, have in recent years been more directly affected by economic developments because of a gradual shift between heating oil and diesel components. In 1978, for example, heating oil represented about 42% of total distillates with most of the remainder being diesel fuel. The heating oil component by 1981 had

dropped to roughly one-third. Diesel fuel's share increased correspondingly. Within the diesel fuel segment, "on-highway" diesel has over the past few years increased its share. No detailed end-use sector breakdown of diesel consumption is as yet available for the year 1982. However, lower truck traffic, estimated to be down more than 10% versus 1981, has undoubtedly had an impact on diesel demand. This is also true for railroad diesel, about 10% of distillate demand, as a result of the loss of roughly 12% in railroad ton miles compared with 1981.

For 1982 as a whole, weather was slightly colder than 1981. The change had only an insignificant effect on heating oil demand in 1982 though, theoretically, differences in distribution of colder weather between individual months can produce some impact on demand, if the changes in monthly weather patterns are extreme.

December distillates supplied fell 269 MBD (8.4%) versus a year ago. Had weather not been 18% warmer than last year and the economy improved even marginally, there probably would not have been any year-to-year deficit.

The level of residual fuel oil supplied continued to sag during 1982, declining more than 20% (427 MBD) versus the prior year. While, for many years, industrial production and residual fuel oil consumption have corresponded fairly closely (see Exhibit V), this relationship has been overwhelmed during the past few years by the effects of the substantial price rises that followed the early 1979 crude supply disruption. These price increases, coupled with increased availability of natural gas, led to substantial fuel switching away from residual fuel oil to natural gas and other fuels. However, with the residual fuel oil/natural gas price gap narrowing substantially in 1981 and 1982, the situation appears to be reversing, although the exact degree of the switch-back to oil use is difficult to determine. Reports indicate that a number of natural gas distributors are applying for, and receiving, approval to lower their prices to industrial customers for short periods (usually 6 months) to be competitive with lower residual fuel oil prices.

At electric utilities, residual fuel use was, however, decidely down in 1982 versus 1981, accounting for about two-thirds of residual fuel oil's total year-to-year decline. Despite a 2% increase in electricity customers, electricity production declined by about 2% in 1982, the first decline in decades. However, the year-to-year declines in both petroleum and natural gas consumed in this sector were much greater -- 16.5% and 11.5%, respectively (9 month comparison). These fuels' decline was counterbalanced by increased hydroelectric and nuclear generation.

Reduction of an estimated 80 MBD in bunker fuel sales (about 20% of residual fuel oil's total decline), arising mainly from lower levels of shipping activity associated with the worldwide economic slump, accounted for much of the remaining decline in residual fuel oil supplied.

The level of kerosine jet fuel supplied lagged about 1% behind last year, roughly in line with the decrease in "miles flown." However, revenue passenger miles increased by 5% over 1981. Replacement of aircraft with models having more fuel-efficient engines continued in 1982, though downtrending fuel prices may have reduced the incentive for fuel-related replacements. Nevertheless, the load factor for the past 12 month (domestic carriers) has exceeded the corresponding prior 12-month period, rising by about one percentage point.

(In millions of B/D)	DECEMBER ESTIMATES			YEAR-TO-DATE ESTIMATES		
	1982	1981	% Change	1982	1981	% Change
—Total domestic products supplied	14.8	16.6	(10.7)	15.2	16.1	(5.5)
—Motor gasoline supplied	6.3	6.7	(6.0)	6.5	6.6	(1.3)
—Distillate fuel oil supplied	2.9	3.2	(8.4)	2.7	2.8	(5.3)
—Residual fuel oil supplied	1.3	2.3	(41.0)	1.7	2.1	(20.5)

SUPPLY[1/]

Declining imports, only partially offset by slightly higher domestic supply, resulted in a 799 MBD (4.8%) net decrease in total supply.

Domestic crude oil production rose by about 80 MBD over 1981's level. The increase can be traced to production from Alaska's Kuparuk field which was on stream for only one-half month in 1981. However, maintenance of essentially the same level of production in the lower 48 in 1982 as during the prior year represents a sharp departure from the experience of the price-controlled '70s. By December, production was some 900,000 B/D above levels that the continued downtrend of the seventies would have indicated.

December petroleum imports experienced a somewhat higher rate of decline than occurred during the prior 11 months. Exhibit VI shows the trend of crude and product imports over the past five years, clearly pointing up the much greater decline experienced by crude imports than those of petroleum products. The degree of U.S. dependence on imports, which has been trending lower since 1979, is also shown. It decreased from roughly 45% in 1979 to about 32% in 1982.

TABLE A
MERCHANDISE TRADE BALANCE AND PETROLEUM

	Total Merchandise Trade			Petroleum Only		
	Imports	Exports	Balance	Imports	Exports	Balance
Jan.-Nov. 1981	252.7	214.6	(38.1)	74.5	3.3	(71.2)
Jan.-Nov. 1982	235.3	196.2	(39.1)	57.5	5.5	(52.0)
Effect on trade bal.	+17.4	(18.4)	(1.0)	+17.0	+2.2	+19.2

Source: Bureau of the Census

Overall, the value of petroleum imports dropped substantially in 1982. Table A shows that, for 11 months, total merchandise imports dropped $17.4 billion, all but $0.4 billion, or 2%, representing a decline in petroleum imports. This $17 billion positive effect on the merchandise trade balance was further enhanced by a more-than-$2 billion increase in petroleum exports, compared with a $20 billion decrease in all other exports. Petroleum exports have increased dramatically since major export restrictions were removed effective October 1981. The reduction in the dollar value of petroleum imports in 1982 is the largest ever and, for the year as a whole, approached the total value of petroleum imports in the mid-seventies. In the past, the effect of any lower petroleum import levels was usually offset by higher prices for oil purchased. In 1982, both volume and price decreased.

Import sources also underwent a significant shift. As Exhibit VII shows, OPEC and non-OPEC sources changed positions as the primary source of U.S. supplies during the past several years. In 1982 (10 months), non-OPEC suppliers accounted for about 57% of total U.S. imports compared with but 31% in 1978. Individual countries' exports to the U.S. also changed dramatically. In 1978, Saudi Arabia, with 13.7% of total petroleum imports, was first, followed by Nigeria, Libya, Algeria, and Venezuela in that order. For 10 months of 1982, Mexico became the leading supplier with about 13% of total imports, followed sequentially by Saudi Arabia, Nigeria, Canada and the United Kingdom.

With interest rates high for most of the year, demand continuing to recede, and crude readily available, reductions in inventory levels continued in 1982. At year end, crude oil inventories were about 15 million barrels below last December but are still estimated at 50-60 million barrels above minimum levels required. Product stocks fell 96 million barrels. However, considering current weak demand and ample available refining capacity, they are more than adequate.

As shown in Exhibit VIII, December gasoline and distillate inventories, at 38 and 61 days of supply, were both at the top of their respective ranges for the 1973-1980 period. During most of 1981, gasoline inventories were either at the upper end or exceeded the historical range; in 1982, though in a somewhat lower range, they averaged about mid-point. Distillate inventories, hugging the mid-range in 1981, fell to the lower end in mid-1982, and have recently risen to or above the upper end of the range.

Quarterly production rates of major products and the degree to which total production of these products satisfied domestic demand is shown in Exhibit IX. While production declined somewhat, the continuing fall in demand and reduction of inventory levels resulted in a higher share of demand being satisfied by current production than was the case in 1981. The graph also shows that refinery utilization of operable refining capacity dropped steadily during 1980, 1981, and early 1982, but has stabilized in the low 70 percent range in recent months. However, operable capacity has been considerably reduced over the past two years (about 2 million barrels) as lower demand forced contraction of refinery operations. In addition, substantial operable capacity is not in actual operation. Based on capacity actually operating, the current utilization rate would be close to 80%. The current gap of more than 3 million barrels between input to crude oil distillation units and estimated capacity in actual operation provides a large degree of flexibility in product management.

Exhibit X charts the trend of changes in the rig count and that of reported well completions. The number of active rigs declined steadily between the beginning of the year and mid-October, but has since been on the increase. On a deseasonalized basis, the increase towards year-end reached about 12% from the October low, though it is still about 40% below last December's level. Reported well completions, lagging the rig trend by several months, have continued to follow a downward trend since their May peak. On a seasonally adjusted basis, the decline since May has reached 30%. However, for the year as a whole, the number of reported well completions reached a new all-time high, up about 9% from the prior year.

(In millions of B/D)	DECEMBER ESTIMATES			YEAR-TO-DATE ESTIMATES		
	1982	1981	% Change	1982	1981	% Change
—Total supply	15.1	16.4	(8.1)	15.7	16.5	(4.8)
—Crude production[2]	8.6	8.6	0.4	8.7	8.6	1.0
—Crude oil imports[3] [4]	3.1	4.0	(22.0)	3.3	4.1	(20.1)
—Product imports	1.3	1.7	(22.0)	1.5	1.6	(3.9)

1/ Total supply, i.e., production plus imports adjusted for net stock change is equal to total products supplied from primary storage. Total products supplied from primary storage less exports is equal to total domestic products supplied. Information contained in this report is derived from information published in the API Weekly Bulletin and is based on historical analysis of the industry. All data reflect the most current information available to the API and include all previously published revisions.

2/ Includes lease condensate.

3/ Beginning with January 1977, the U.S. Department of Energy began reporting crude oil imports as of the date of importation. Previously, this data, with the exception of Canadian crude imports, was reported as of the date it was received at the refinery. This change may affect both the level of crude oil imports and crude oil stocks. API estimates of these data may, therefore, differ slightly from those of the U.S. Department of Energy.

4/ API data do not include crude oil imported for the Strategic Petroleum Reserve (SPR) nor crude oil stocks held in the SPR (according to the U.S. Department of Energy, the SPR held approximately 294 million barrels as of December 31, 1982).

ESTIMATED UNITED STATES PETROLEUM BALANCE

(Daily Average in Thousands of 42 Gallon Barrels)

Supply/Products Supplied From Primary Storage	DECEMBER			YEAR-TO-DATE		
	1982[1]	1981[2]	% Change	1982[3R]	1981[2]	% Change
Products Supplied:						
Motor gasoline	6,281	6,681	(6.0)	6,505	6,588	(1.3)
Unleaded motor gasoline*	3,514	3,571**	(1.6)	3,515	3,403**	3.3
Naphtha-jet	194	174	11.5	204	198	3.0
Kerosine-jet	822	802	2.5	800	809	(1.1)
Kerosine	144	197	(26.9)	124	127	(2.4)
Distillate fuel oil	2,943	3,212	(8.4)	2,679	2,829	(5.3)
Residual fuel oil	1,327	2,250	(41.0)	1,661	2,088	(20.5)
All other oils[4]	3,374	3,552	(5.0)	3,525	3,693	(4.5)
Reclassified[5]	- 266	- 268	(0.7)	- 323	- 269	20.1
Total domestic products supplied	14,819	16,600	(10.7)	15,175	16,063	(5.5)
Exports	810	655	23.7	812	595	36.5
Total products supplied	15,629	17,255	(9.4)	15,987	16,658	(4.0)
Supply:						
Domestic production:						
Crude oil[6]	8,620	8,585	0.4	8,654	8,572	1.0
Natural gas liquids	1,551	1,590	(2.5)	1,543	1,609	(4.1)
Other supply[7]	504	576	(12.5)	640	560	14.3
Total domestic supply	10,675	10,751	(0.7)	10,837	10,741	0.9
Imports:						
Crude oil, total	3,099[10/]	3,971[10/]	(22.0)	3,308[10/]	4,141[10/]	(20.1)
Canadian	184	199	(7.5)	202	164	23.2
Other	2,915	3,772	(22.7)	3,106	3,977	(21.9)
Products, total	1,331	1,706	(22.0)	1,537	1,599	(3.9)
Residual fuel oil	597	916	(34.8)	737	800	(7.9)
Other	734	790	(7.1)	800	799	0.1
Total imports	4,430	5,677	(22.0)	4,845	5,740	(15.6)
Total supply	15,105	16,428	(8.1)	15,682	16,481	(4.8)
Stock change, all oils	- 524	- 827	XXXX	- 305	- 177	XXXX
Refinery Operations						
Input to crude oil distillation units	11,815	12,704	(7.0)	12,176	12,751	(4.5)
Operable capacity	16,663	18,364	(9.3)	17,445	18,603	(6.2)
Refinery utilization (%)[8]	70.9%	69.2%	2.5	69.8%	68.5%	1.9
Crude oil runs	11,377	12,349	(7.9)	11,766	12,471	(5.7)

Stocks (millions bbls.)	1982		1981[2]	% Change from . . .	
	Dec. 31[9]	Nov. 30[9]	Dec. 31	Previous Month	Year Ago
Crude oil[10/]	348.1	349.2r/	363.5	(0.3)	(4.2)
Unfinished oils	102.8	109.1	111.3	(5.8)	(7.6)
Motor gasoline	241.4	229.3	253.0	5.3	(4.6)
Naphtha-jet	6.0	6.4	7.1	(6.3)	(15.5)
Kerosine-jet	32.2	34.6	34.0	(6.9)	(5.3)
Kerosine	10.7	10.9	11.0	(1.8)	(2.7)
Distillate fuel oil	179.6	186.6r/	191.5	(3.8)	(6.2)
Residual fuel oil	67.3	64.0	78.0	5.2	(13.7)
All other oils	154.1	168.4r/	203.9	(8.5)	(24.4)
Total all oils	1,142.2	1,158.5r/	1,253.3	(1.4)	(8.9)

1/ Based on API estimated data converted to a monthly basis.
2/ Source: U.S. Department of Energy.
3/ Source: January-October, U.S. Department of Energy, November-December, API.
4/ Includes crude losses.
5/ Beginning with January 1981, U.S. Department of Energy began using a new data collection system which encompasses a method to ascertain the amount of product reclassified during the production phase. So that there will be no double counting of these volumes, they are subtracted from total domestic products supplied.
6/ Includes lease condensate.
7/ Includes Unaccounted-for crude oil, Refinery input of other hydrocarbons, and Processing gain.
8/ Represents "Input to crude oil distillation units" as a percent of "Operable capacity."
9/ Derived by interpolating API weekly stocks data.
10/ Data do not include oil imported for the Strategic Petroleum Reserve (SPR) nor crude oil stocks held in the SPR.
R/ Revised.
* Included in motor gasoline.
** Differs slightly from U.S. Department of Energy figures since API uses refinery shipments to calculate demand.

ESTIMATED UNITED STATES PETROLEUM BALANCE

(Daily Average in Thousands of 42 Gallon Barrels)

Supply/Products Supplied From Primary Storage	4th QUARTER		
	1982[1]	1981[2]	% Change
Products Supplied:			
Motor gasoline	6,369	6,546	(2.7)
Unleaded motor gasoline*	3,508	3,428**	2.3
Naphtha-jet	189	181	4.4
Kerosine-jet	810	782	3.6
Kerosine	138	161	(14.3)
Distillate fuel oil	2,651	2,966	(10.6)
Residual fuel oil	1,424	2,015	(29.3)
All other oils[3]	3,506	3,646	(3.8)
Reclassified[4]	- 289	- 285	1.4
Total domestic products supplied	14,798	16,012	(7.6)
Exports	848	698	21.5
Total products supplied	15,646	16,710	(6.4)
Supply:			
Domestic production:			
Crude oil[5]	8,645	8,577	0.8
Natural gas liquids	1,560	1,606	(2.9)
Other supply[6]	632	720	(12.2)
Total domestic supply	10,837	10,903	(0.6)
Imports:			
Crude oil, total	3,356[9/]	3,892[9/]	(13.8)
Canadian	192	185	3.8
Other	3,164	3,707	(14.6)
Products, total	1,513	1,660	(8.9)
Residual fuel oil	699	860	(18.7)
Other	814	800	1.8
Total imports	4,869	5,552	(12.3)
Total supply	15,706	16,455	(4.6)
Stock change, all oils	+ 60	- 255	XXXX
Refinery Operations			
Input to crude oil distillation units	12,038	12,546	(4.0)
Operable capacity	16,835	18,418	(8.6)
Refinery utilization (%)[7]	71.5%	68.1%	5.0
Crude oil runs	11,627	12,215	(4.8)

Stocks (millions bbls.)	4th QUARTER		
	1982[8]	1981[2]	% Change
Crude oil	348.1[9/]	363.5[9/]	(4.2)
Unfinished oils	102.8	111.3	(7.6)
Motor gasoline	241.4	253.0	(4.6)
Naphtha-jet	6.0	7.1	(15.5)
Kerosine-jet	32.2	34.0	(5.3)
Kerosine	10.7	11.0	(2.7)
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Total all oils	1,142.2	1,253.3	(8.9)

1/ Source: U.S. Department of Energy, October; November-December, API.
2/ Source: U.S. Department of Energy.
3/ Includes crude losses.
4/ Beginning with January 1981, U.S. Department of Energy began using a new data collection system which encompasses a method to ascertain the amount of product reclassified during the production phase. So that there will be no double counting of these volumes, they are subtracted from total domestic products supplied.
5/ Includes lease condensate.
6/ Includes unaccounted for crude oil, refinery input of other hydrocarbons, and processing gain.
7/ Represents "Input to crude oil distillation units" as a percent of "Operable capacity".
8/ Derived by interpolating API weekly stocks data.
9/ Data do not include oil imported for the Strategic Petroleum Reserve (SPR) nor crude oil stocks held in the SPR.
* Included in motor gasoline.
** Differs slightly from U.S. Department of Energy figures since API uses refinery shipments to calculate demand.

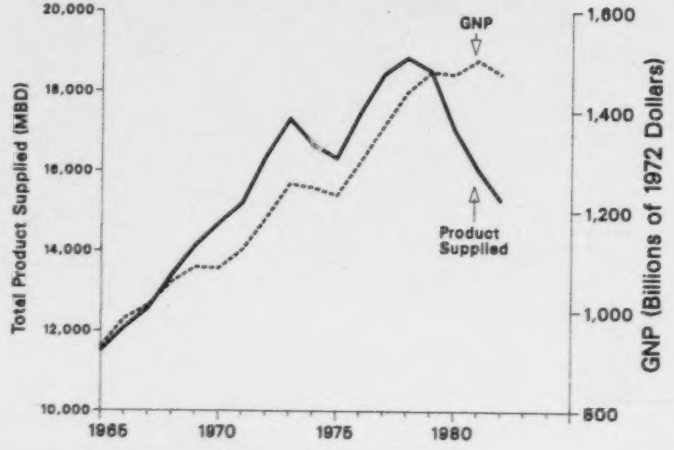
Exhibit I

Products Supplied-Deseasonalized

Source: Dept. of Energy and A.P.I.

Exhibit II

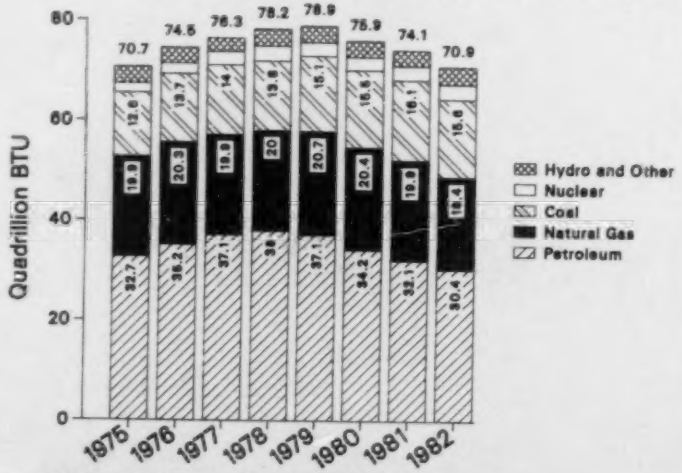
PRODUCT SUPPLIED AND GNP



Sources: Department of Energy, American Petroleum Institute
Department of Commerce

Exhibit III

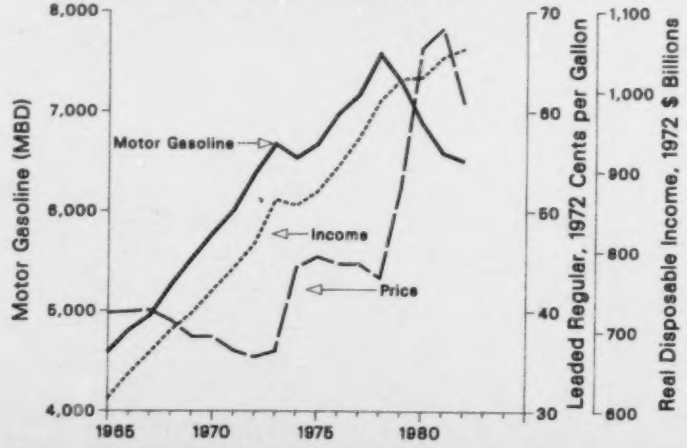
ENERGY CONSUMPTION BY TYPE



Sources: Department of Energy; 1982 estimated by API

Exhibit IV

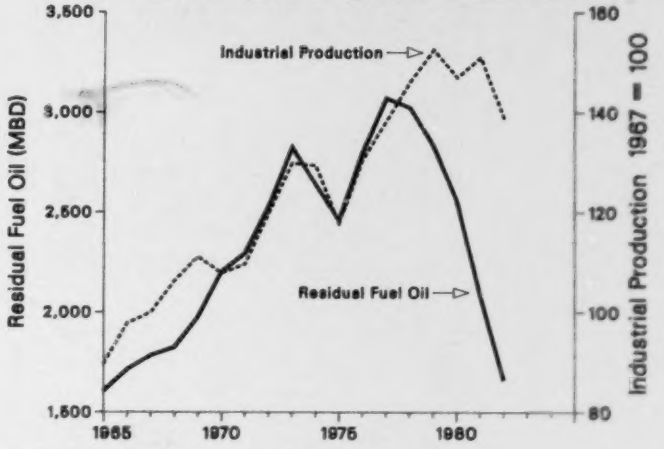
MOTOR GASOLINE SUPPLIED, REAL PRICES AND REAL DISPOSABLE PERSONAL INCOME



Sources: Department of Energy, American Petroleum Institute,
Commerce Department, Oil and Gas Journal

Exhibit V

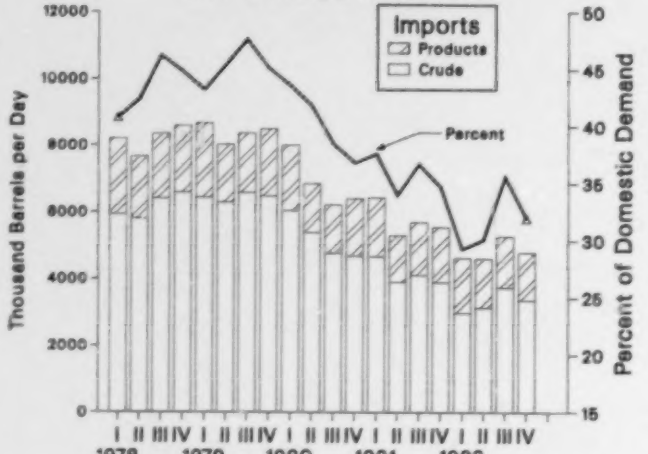
RESIDUAL FUEL OIL SUPPLIED AND INDUSTRIAL PRODUCTION



Sources: Department of Energy, American Petroleum Institute, Federal Reserve Board

Exhibit VI

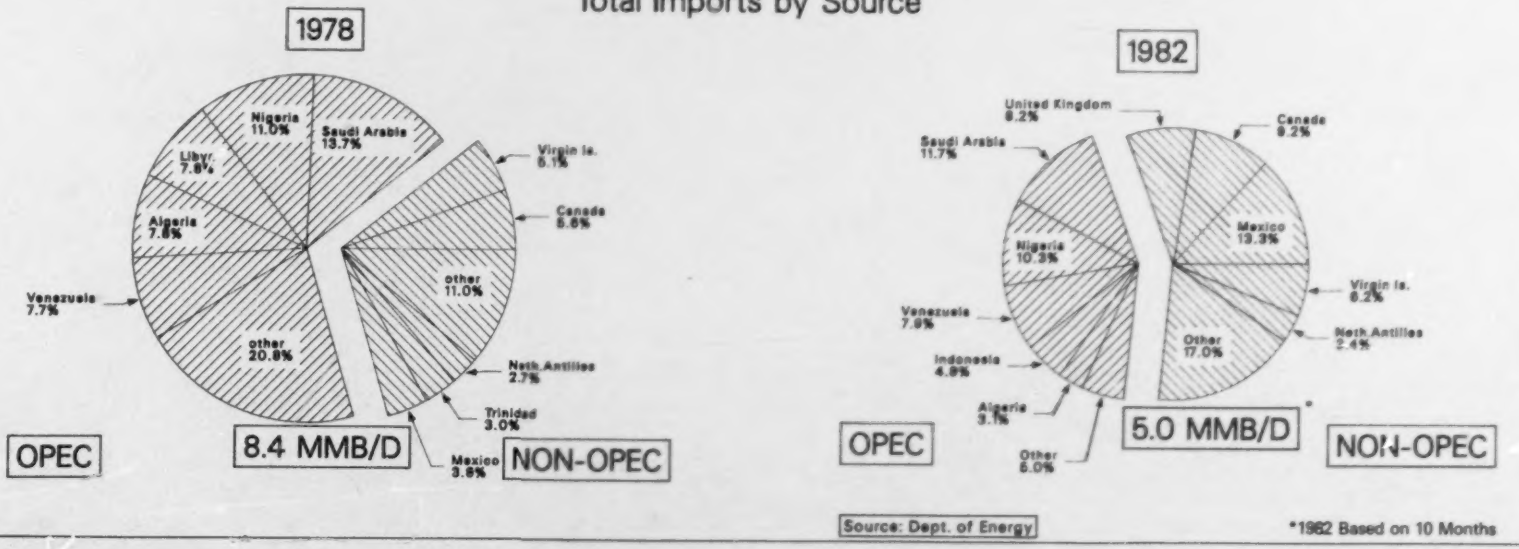
Imports of Crude Oil and Refined Products



Sources: Department of Energy, American Petroleum Institute

Exhibit VII

Total Imports by Source

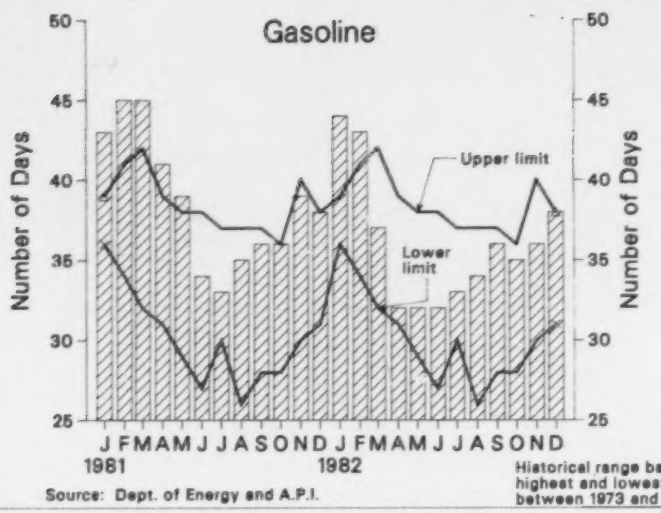


Source: Dept. of Energy

*1982 Based on 10 Months

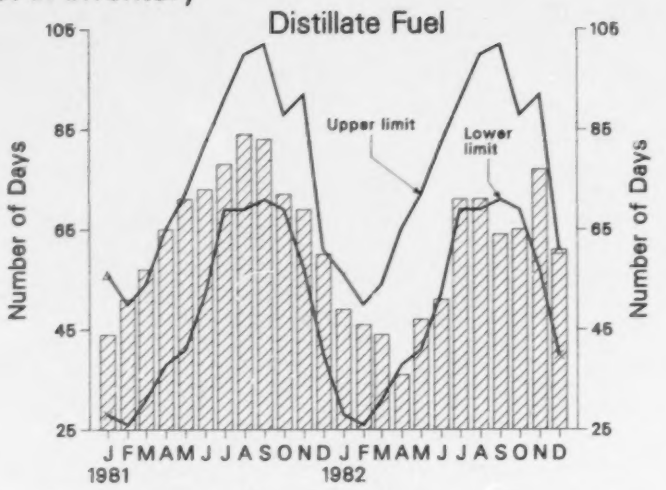
Exhibit VIII

Days Supply of Product in Inventory



Historical range based on highest and lowest values between 1973 and 1980

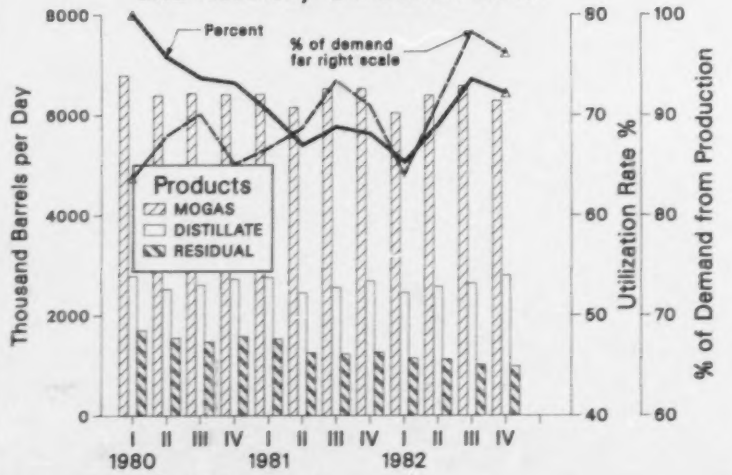
Source: Dept. of Energy and A.P.I.



Source: Dept. of Energy and A.P.I.

Exhibit IX

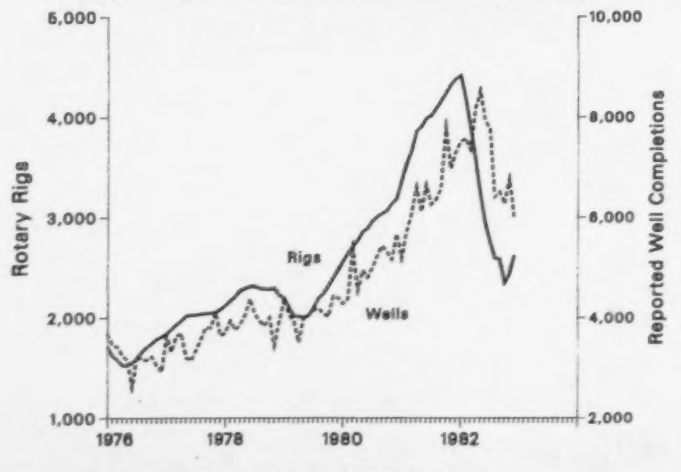
Refinery Production of Major Products and Refinery Utilization Rate



Source: Dept. of Energy and A.P.I.

Exhibit X

SEASONALLY ADJUSTED ROTARY RIG ACTIVITY AND REPORTED WELL COMPLETIONS



Sources: Hughes Tool Company, American Petroleum Institute

A2575-2 3/14/83

American Petroleum Institute
2101 L Street, Northwest
Washington, D.C. 20037

Monthly Statistical Report

Prepared by the Statistics Department

Vol. 7, No. 1

FEBRUARY 17, 1983

JANUARY 1983

ESTIMATED U.S. PETROLEUM BALANCE

SUMMARY

Total petroleum products supplied continued to decline in January. However, motor gasoline did not share in the year-to-year decline and close to 60% of the decline in distillates supplied was the result of warmer weather. On a seasonally-adjusted basis, residual fuel oil deliveries, while down 20% from last January, recovered sharply from the prior-month decline.

Crude oil production was ahead of last year, both as a result of greater production from the Kuparuk field and higher production in the lower 48. While imports were down compared with a year ago, the rate of decline seems to have slowed in recent months. Inventories, though about 85 million barrels below last January, are at fully adequate levels. Drilling-connected activities showed a generally downward trend.

PRODUCTS SUPPLIED[1/]

Motor gasoline supplied increased 90 MBD (1.5%) over year-ago levels. However, last January's level was extremely low, being about 200 MBD less, on a seasonally-adjusted basis, than the average of the preceding and following three-month periods. When adjusted for this departure from trend, this January was actually about 2% lower than last year. This places it roughly in line with 1982 results. Prices, adjusted for inflation, have dropped about $.30 (22%) since the March 1981 high. This decrease has eliminated about two-thirds of the increase experienced in 1979/1980, contributing to last year's near-stabilization of demand. Exhibit A shows that trend. As the graph also shows, demand for the other two major products, distillates and residual fuel oil, remains weak.

The market share of unleaded gasoline during the past couple of months has been at the higher end of the narrow range in which it has moved for about a year. The January market share reached 54.7% of total, about three percentage points above last year, less than the historical year-to-year advance.

January weather was some 20% warmer than last year, accounting for about 275 MBD of the decline in distillates supplied. The remaining 200 MBD drop is roughly in line with the decline experienced in 1982. The state of the economy continues to affect distillate demand adversely. Truck and railroad traffic, for example, have been below prior-year levels. The shifts over the past several years in the composition of distillate demand, with more than two-thirds now being used for other than heating purposes, versus roughly 53% in 1976, may have increased the sensitivity of distillate demand to price changes. We estimate that almost three-quarters of the remaining 200 MBD year-to-year deficit is attributable to this factor.

Residual fuel oil supplied declined 427 MBD (20.0%). Though the downward trend in industrial production appears to have slowed, the economy as a whole has not yet improved to any meaningful degree. Electric utilities, the largest user of residual fuel oil, continue to show declining petroleum use, both in absolute terms and in its share of total energy sources used in generating electricity. For 10 months of 1982, a period during which total generation of electricity declined roughly 2%, petroleum usage by utilities (mostly residual fuel oil) dropped about 285 MBD or close to 30%, and its market share declined from 9% to less than 7%. There are indications that this downward trend has continued into 1983; the decline in electricity generation, for example, has actually accelerated in recent weeks. We estimate that the resultant drop in residual fuel oil consumption by electric utilities accounts for about two-thirds of the total year-to-year decline in residual fuel oil supplied.

Bunker fuel sales also continued to decline in late 1982 in line with decreased worldwide shipping activity. This trend is believed to have continued into January and is estimated to account for roughly 90 MBD of the total year-to-year residual fuel oil decline.

The decreases in the price of residual fuel oil and provisions of the Natural Gas Policy Act have narrowed—and in some cases eliminated—the gap between residual fuel oil prices and those of natural gas faced by industrial consumers. However, recent regulatory agencies' authorization to distribution companies to lower prices to industrial customers may have improved natural gas' position in scattered areas. While we believe that residual fuel oil may have been the net beneficiary of these competing forces, we estimate that the effect on total industrial consumption has been relatively small.

Kerosene jet fuel fell almost 7% below a year ago. "Miles flown" dropped about 1% during 1982 as a whole. The downtrend in jet fuel prices, down about 7% since the spring of 1981, may have reduced the incentive for fuel-related replacements, though, on the whole, the replacement program appears to be proceeding. Nevertheless, the load factor has remained slightly ahead during the last available 12-month period compared with the prior year and revenue passenger miles (domestic service) have advanced about 5%.

JANUARY ESTIMATES

(In millions of B/D)

	1983	1982	% Change
—Total domestic products supplied	15.0	15.9	(5.6)
—Motor gasoline supplied	6.0	5.9	1.5
—Distillate fuel oil supplied	3.0	3.5	(13.7)
—Residual fuel oil supplied	1.7	2.1	(20.0)

SUPPLY[1/]

Total supply was about 278 MBD below last year, with an increase of 194 MBD in total domestic supply partially offsetting a 472 MBD imports decline.

Domestic crude production increased 96 MBD over last January. In Alaska, there has been some increase in Kuparuk field production, compared with last January. However, by far the major portion of the increase stems from higher production in the lower 48. These states' production stabilized in 1982 at a level about equal to the prior year. This contrasts with the downward trend prior to decontrol which, during much of the seventies, had averaged some 300 MBD annually.

Imports were 472 MBD below a year ago, a 9.3% year-to-year decline. During the past several months, imports have experienced lesser declines than in the preceding 2-1/2 years. Imports made up about 31% of total domestic products supplied, slightly below last January's 32%. Crude oil imports accounted for the entire decrease; product imports actually rose 3%.

For 1982, the value of petroleum imports has dropped about 21%. Almost the entire drop can be ascribed to lower crude oil imports; product imports dropped only minimally. In November 1982 (latest data available), Mexico continued to be the leading source of U.S. oil imports. It supplied 15% of U.S. imports that month, followed by the United Kingdom with almost 11%, then Canada, Venezuela, and Saudi Arabia, in that order.

Exports of petroleum products continue at a strong pace. While there was some slowdown in residual fuel oil exports, distillate and kerosine jet fuel exports have risen significantly. In December, light fuel oil exports reached a record 4.3 million barrels (about 140 MBD).

Inventories of crude and products at month end were about 85 million barrels below last January but are still fully adequate. About half the reduction stems from the reduction in "other oils" inventories, primarily because of reduced liquefied petroleum gas stocks. During January, total inventories fell about nine million barrels or about 280 MBD. This compares with a normal sesasonal drawdown of about 1,100 MBD, leaving January inventories at 76 days of supply versus an average of about 63 days since the mid-seventies. Gasoline inventories rose about 6 million barrels during January, less than half the rate normally experienced, but unusually mild weather held depletion of distillate inventories to about 17 million barrels, half their normal January decline. Distillate inventories represent 55 days of supply, near the high of the January range.

Operable refinery capacity decreased about 1.3 million barrels since January 1982. Utilization rates have remained fairly low, and are less than three percentage points above last January's. If input to crude oil distillation units is measured against capacity actually operating, however, the estimated utilization rate rises to more than 75%.

After rising between mid-October and the end of the year, the rig count has since faltered. January's count is 41% below a year ago, but, seasonally-adjusted, about 9% above October's. Well completions declined about 16% compared with a year ago and, when adjusted for seasonal variations, have declined about 24% from the May high. The seismic crew count, a good longer-term indicator of drilling activity, has continued to decline since reaching its peak in the fall of 1981. In January 1983, it was 34% less than a year ago.

JANUARY ESTIMATES

(In millions of B/D)

	1983	1982	%Change
—Total supply	15.6	15.8	(1.8)
—Crude production[2/]	8.7	8.6	1.1
—Crude oil imports[3/4/]	3.0	3.5	(14.9)
—Product imports	1.6	1.6	3.0

1/ Total supply, i.e., production plus imports adjusted for net stock change is equal to total products supplied from primary storage. Total products supplied from primary storage less exports is equal to total domestic products supplied. Information contained in this report is derived from information published in the API Weekly Bulletin and is based on historical analysis of the industry. All data reflect the most current information available to the API and include all previously published revisions.

2/ Includes lease condensate.

3/ Beginning with January 1977, the U.S. Department of Energy began reporting crude oil imports as of the date of importation. Previously, this data, with the exception of Canadian crude imports, was reported as of the date it was received at the refinery. This change may affect both the level of crude oil imports and crude oil stocks. API estimates of these data may, therefore, differ slightly from those of the U.S. Department of Energy.

4/ API data do not include crude oil imported for the Strategic Petroleum Reserve (SPR) nor crude oil stocks held in the SPR (according to the U.S. Department of Energy, the SPR held approximately 301 million barrels as of January 31, 1983).

ESTIMATED UNITED STATES PETROLEUM BALANCE

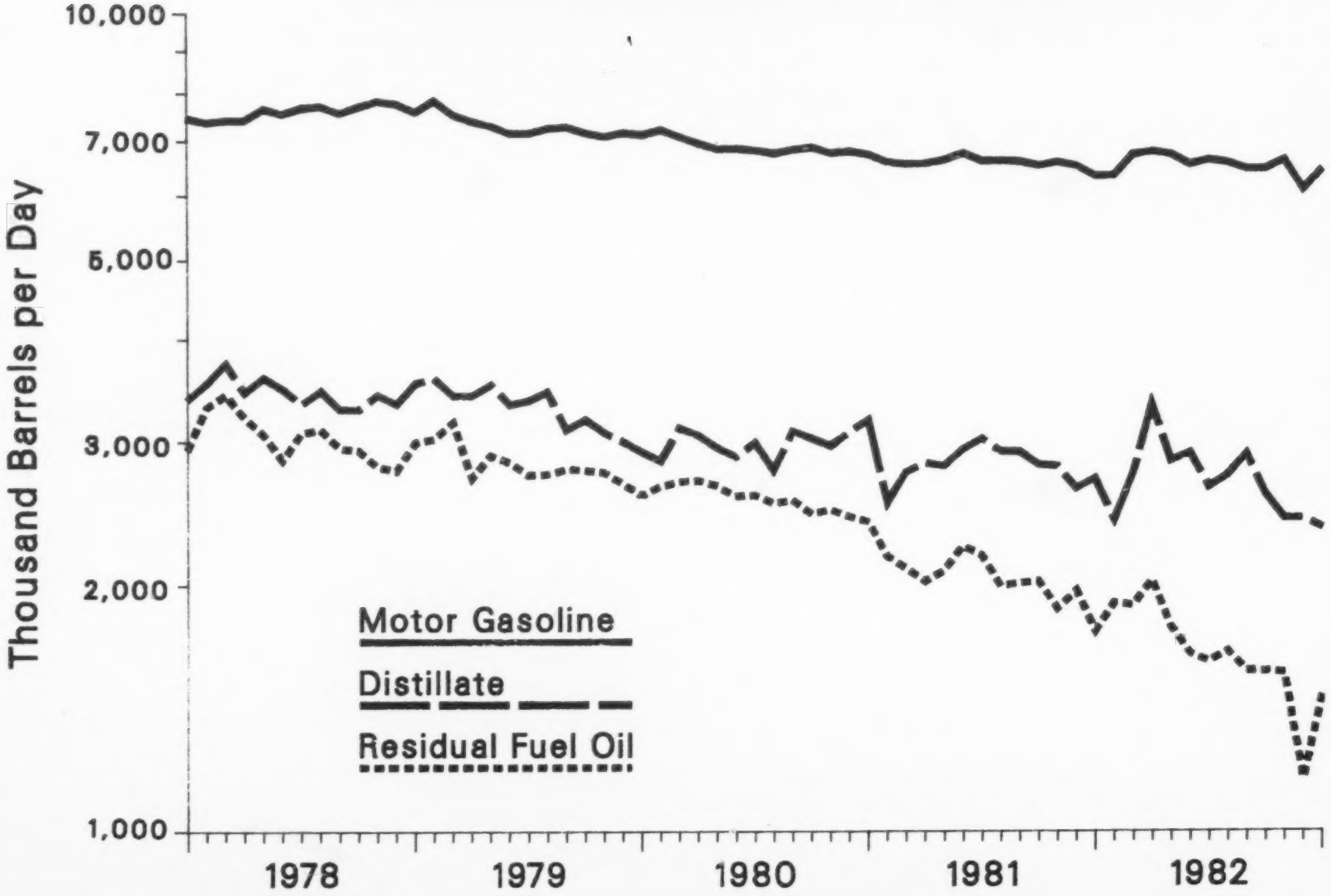
(Daily Average in Thousands of 42 Gallon Barrels)

Supply/Products Supply From Primary Storage	JANUARY					
	1983[1]	1982[2]	% Change	1983[3R]	1982[2]	% Change
Products Supplied:						
Total motor gasoline	6,023	5,933	1.5			
Finished leaded motor gasoline*	2,730	2,884	(5.3)			
Finished unleaded motor gasoline*	3,293	3,049	8.0			
Naphtha-jet	179	164	9.1			
Kerosine-jet	804	861	(6.6)			
Distillate fuel oil	2,980	3,454	(13.7)			
Residual fuel oil	1,711	2,138	(20.0)			
All other oils[4]	3,590	3,667	(2.1)			
Reclassified[5]	- 286	- 319	(10.3)			
Total domestic products supplied	15,001	15,898	(5.6)			
Exports	837	829	1.0			
Total products supplied	15,838	16,727	(5.3)			
Supply:						
Domestic production:						
Crude oil[6]	8,681	8,585	1.1			
Natural gas liquids	1,532	1,548	(1.0)			
Other supply[7]	751	637	17.9			
Total domestic supply	10,964	10,770	1.8			
Imports:						
Crude oil, total	2,959[10/]	3,478[10/]	(14.9)			
Canadian	204	191	6.8			
Other	2,755	3,287	(16.2)			
Products, total	1,632	1,585	3.0			
Residual fuel oil	642	821	(21.8)			
Other	990	764	29.6			
Total imports	4,591	5,063	(9.3)			
Total supply	15,555	15,833	(1.8)			
Stock change, all oils	- 283	- 894	XXXX			
Refinery Operations						
Input to crude oil distillation units	11,566	12,029	(3.8)			
Operable capacity	16,814	18,131	(7.3)			
Refinery utilization (%)[8]	68.8%	66.3%	3.8			
Crude oil runs	11,198	11,638	(3.8)			

Stocks (millions bbls.)	1983	1982	1982[2]	% Change from ...	
	Jan. 31[9]	Dec. 31[9]	Jan. 31	Previous Month	Year Ago
Crude oil[10/]	358.8	348.0r/	370.9	3.1	(3.3)
Unfinished oils	111.0	102.8	116.7	8.0	(4.9)
Total motor gasoline**	247.3	241.2r/	262.1	2.5	(5.6)
Finished leaded motor gasoline*	102.5	98.3	111.7	4.3	(8.2)
Finished unleaded motor gasoline*	99.2	97.0	102.5	2.3	(3.2)
Naphtha-jet	6.1	6.0	6.8	1.7	(10.3)
Kerosine-jet	33.0	32.3r/	30.4	2.2	8.6
Distillate fuel oil	163.3	179.9r/	166.0	(9.2)	(1.6)
Residual fuel oil	62.3	67.2r/	68.2	(7.3)	(8.7)
All other oils	158.6	171.8r/	204.5	(7.7)	(22.4)
Total all oils	1,140.4	1,149.2r/	1,225.6	(0.8)	(7.0)

1/ Based on API estimated data converted to a monthly basis.
2/ Source: U.S. Department of Energy.
3/ Source:
4/ Includes crude losses.
5/ Beginning with January 1981, U.S. Department of Energy began using a new data collection system which encompasses a method to ascertain the amount of product reclassified during the production phase. So that there will be no double counting of these volumes, they are subtracted from total domestic products supplied.
6/ Includes lease condensate.
7/ Includes Unaccounted for crude oil, Refinery input of other hydrocarbons, and Processing gain.
8/ Represents "Input to crude oil distillation units" as a percent of "Operable capacity."
9/ Derived by interpolating API weekly stocks data.
10/ Data do not include oil imported for the Strategic Petroleum Reserve (SPR) nor crude oil stocks held in the SPR.
R/ Revised.
* Included in total motor gasoline.
** Includes finished leaded, finished unleaded and motor gasoline blending components stocks.

EXHIBIT A
SEASONALLY ADJUSTED PRODUCT SUPPLIED
MAJOR PRODUCTS (LOG SCALE)



Sources: Department of Energy, American Petroleum Institute

A25 15-2

American Petroleum Institute
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Monthly Statistical Report

Prepared by the Statistics Department

Vol. 7, No. 2

MARCH 17, 1983

FEBRUARY 1983

ESTIMATED U.S. PETROLEUM BALANCE

SUMMARY

The level of domestic petroleum products supplied in February continued to trail year-ago levels, falling 956 MBD (6.0%). About 40% of this decrease was due to a combination of warmer weather and the drawdown of secondary and tertiary stocks.

Crude oil production decreased marginally due primarily to abnormally high production last February. Imports continued to decline, falling at roughly the same rate versus last year as in January. Inventories are some 85 million barrels below last February, but are more than adequate to satisfy current demand. Indeed, when compared with current deliveries, inventories are substantially higher than those of the last decade.

PRODUCTS SUPPLIED[1/]

The level of motor gasoline supplied declined 147 MBD (2.4%) from year-earlier levels. This is a surprising departure from recent trends. However, as in February 1982, this February's level of gasoline supplied was affected by an apparent drawdown of secondary storage, possibly because of uncertainty in current world oil markets. This increase in the secondary storage drawdown rate appears to be the primary cause of the year-to-year decline in the level of gasoline supplied.

Longer and shorter-term price effects now appear to be largely offsetting each other in the demand for gasoline. Pump prices fell about 8¢ per gallon during the first two months of 1983 and are now some 15¢ below a year ago. On an inflation-adjusted basis, the total drop since the March 1981 high is roughly 34¢ (25%). The almost-uninterrupted price erosion over the past two years has erased roughly three-quarters of the sharp increases in real gasoline prices in 1979 and 1980.

Unleaded gasoline held a 53.8% share of the total motor gasoline market. This is about two percentage points higher than last February, in the range of the recent lower year-to-year increases that seem to have become the current norm.

The amount of distillate supplied fell 366 MBD (11.5%) versus the prior year. The weather factor again played a prominent role in this decrease. Weather was about 10% warmer than last February, accounting for lowering demand by 100 MBD to 150 MBD. We estimate that lower truck and rail traffic accounted for another 100-150 MBD.

Last February's level of distillate supplied appears to have deviated substantially from the then-prevailing trend because of drawdowns in secondary storage levels. A similar situation exists this February. However, as this year's drawdown in secondary storage is estimated to have been 50-100 MBD greater than last February's, the overall year-to-year deficit is similary affected.

The level of residual fuel oil supplied fell 348 MBD (15.4%) compared with last year, continuing a year-to-year decline pattern that has existed for almost five years. The February 1983 level was about 2.0 MMBD below the corresponding 1978 period.

In the electric utility sector, oil use has continued to decline due to a combination of reduced electricity output and a smaller market share. Net electricity generated fell about 2% during the first 11 months of 1982 versus the corresponding 1981 period, mainly as a result of worsening economic conditions. At the same time, oil's share of electricity generation fell from 9.1% to 6.6%, while hydroelectric, nuclear, and coal generation each gained in share. We believe that these trends have continued and caused an estimated reduction of over 250 MBD in the level of residual fuel oil supplied to the utility sector in February. The abnormally warm weather that has prevailed since the beginning of the year had a further downward effect on residual fuel oil supplied, directly in the heating market and indirectly in the electric utility market. However, because of oil's declining position as a fuel source for utilities, the total weather effect for February residual demand is estimated to be less than 40 MBD.

Bunker fuel sales continued to decline in line with lower worldwide levels of shipping activity. The year-to-year loss approximates 90 MBD.

Slumping residual fuel oil prices, combined with NGPA-mandated natural gas price increases, have narrowed the gap between residual fuel oil prices and those of natural gas, its major competitor in the industrial arena. In some marketing areas, in fact, price parity has apparently been reached on a heating value basis. In response, some pipeline companies have obtained short-term approval for extending lower rates for their industrial customers, though a portion of these companies apparently have not yet implemented the lower rates. Other natural gas distributors are reported to have pared or postponed rate increase requests in order to improve their competitive position versus alternative fuels. The fact that more than half of all industrial customers now have dual-capacity boilers—and practically all recent installations have more-than-one-fuel capacity—has enhanced potential fuel switching flexibility. On balance, however, while it appears that over the past few months residual fuel oil may have been the net beneficiary of the competing market forces, the volume involved is likely to have been small.

Kerosine jet fuel declined 2% in February versus a year ago. "Miles flown" during 1982 in domestic service were about equal to those in 1981. However, revenue passenger miles (domestic service), an indicator of air traffic that had been rising at an approximate 5% rate, grew 8% in January versus last year and is reported to have achieved an even higher year-to-year increase in February. The continued introduction of more fuel-efficient aircraft has resulted in gradually reducing jet fuel use over the past several years.

(In millions of B/D)	FEBRUARY ESTIMATES			YEAR-TO-DATE ESTIMATES		
	1983	1982	% Change	1983	1982	% Change
—Total domestic products supplied	15.0	15.9	(6.0)	15.0	15.9	(5.7)
—Motor gasoline supplied	5.9	6.1	(2.4)	6.0	6.0	(0.3)
—Distillate fuel oil supplied	2.8	3.2	(11.5)	2.9	3.3	(12.7)
—Residual fuel oil supplied	1.9	2.3	(15.4)	1.8	2.2	(17.7)

SUPPLY[1/]

Total supply was 391 MBD below last year, the net result of a 123 MBD increase in total domestic supply and a 514 MBD imports decrease.

Last February's domestic crude oil production was at the highest daily rate for the year, about 74 MBD above the 1982 average. Thus, the 73 MBD (0.8%) decline this February is misleading since there has been no change in the basic trend. Generally speaking, over the past two years, new production has offset the natural production decline in existing fields. The graph on page four shows this general trend and the course of Alaskan production, where North Slope production increases have more than offset erosion in the Cook Inlet (South Alaska) area. It also reveals that, had production in the lower 48 had the same decline that was experienced in the seventies, the 48 state's production level would now be about 930,000 barrels per day less than current rates.

The imports decline of 514 MBD (11.3%) was brought about mainly by lower crude oil imports. Products have in recent months held at relatively stable levels and actually rose more than 80 MBD in February. Total imports are at about the same level as in 1971. They currently represent about 27% of domestic products supplied compared with about 40% two years ago and 48% in 1977. Mexico continues to be the number one source of U.S. imports, accounting for about 15% of the total, followed by Canada, Nigeria, and the United Kingdom, each with about 10%.

During January, the latest month for which data are available, exports reached all-time highs for light and heavy fuel oils. Combined with the lower rate of imports, the higher export rate is contributing substantially towards a more favorable balance of payments.

Total petroleum inventories fell roughly 21 MM barrels in February, not inconsistent with the drawdown level of prior years. While about 85 million barrels below last year, total inventories, at 74 days of supply, are substantially above the range experienced in the late 70's and some 16 days above the range's average. Crude inventories, 75-100 million barrels above needed levels, contribute the most to this level. Distillate inventories fell about 17 million barrels, roughly two-thirds the normal decline. Gasoline inventories are undergoing normal seasonal buildup. Days of supply of distillates and gasoline, at 52 and 42 days, both exceed their respective maximum ranges in the late-70's.

At 66.1%, February's refinery utilization rate continues to reflect the low levels of demand and adequate levels of inventories. However, if capacity in actual operation is used as a measure, the rate rises to about 73%.

Active drilling rigs sank to 2,192 in February, only about half the year-ago level. Wells completed declined 5.8% compared with February 1982 and, seasonally adjusted, are now 15% below the May 1982 high.

(In millions of B/D)	FEBRUARY ESTIMATES			YEAR-TO-DATE ESTIMATES		
	1983	1982	% Change	1983	1982	% Change
—Total supply	15.1	15.5	(2.5)	15.3	15.7	(2.1)
—Crude production[2]	8.7	8.7	(0.8)	8.7	8.7	0.2
—Crude oil imports[3,4]	2.2	2.8	(21.4)	2.6	3.2	(17.6)
—Product imports	1.8	1.7	4.8	1.7	1.7	3.9

1/ Total supply, i.e., production plus imports adjusted for net stock change is equal to total products supplied from primary storage. Total products supplied from primary storage less exports is equal to total domestic products supplied. Information contained in this report is derived from information published in the API Weekly Bulletin and is based on historical analysis of the industry. All data reflect the most current information available to the API and include all previously published revisions.

2/ Includes lease condensate.

3/ Beginning with January 1977, the U.S. Department of Energy began reporting crude oil imports as of the date of importation. Previously, this data, with the exception of Canadian crude imports, was reported as of the date it was received at the refinery. This change may affect both the level of crude oil imports and crude oil stocks. API estimates of these data may, therefore, differ slightly from those of the U.S. Department of Energy.

4/ API data do not include crude oil imported for the Strategic Petroleum Reserve (SPR) nor crude oil stocks held in the SPR (according to the U.S. Department of Energy, the SPR held approximately 306 million barrels as of February 28, 1983).

ESTIMATED UNITED STATES PETROLEUM BALANCE

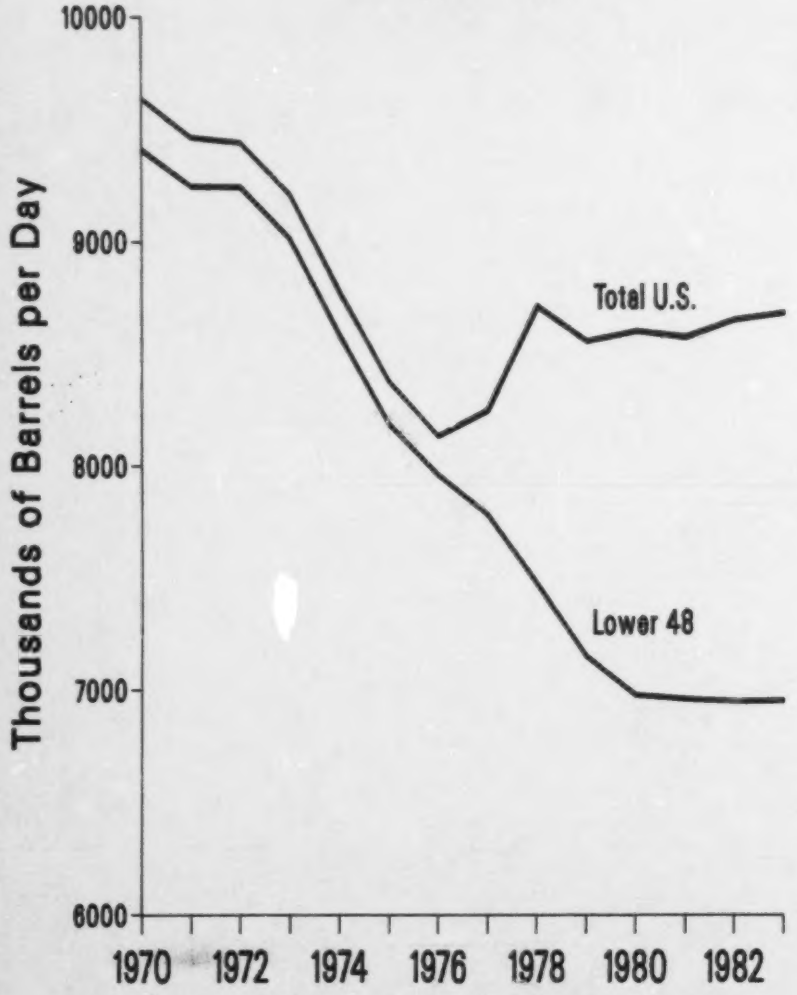
(Daily Average in Thousands of 42 Gallon Barrels)

Supply/Products Supply From Primary Storage	FEBRUARY			YEAR-TO-DATE		
	1983[1]	1982[2]	% Change	1983[3R]	1982[2]	% Change
Products Supplied:						
Total motor gasoline	5,923	6,070	(2.4)	5,978	5,998	(0.3)
Finished leaded motor gasoline*	2,735	2,925	(6.5)	2,734	2,903	(5.8)
Finished unleaded motor gasoline*	3,188	3,145	1.4	3,244	3,095	4.8
Naphtha-jet	193	214	(9.8)	187	187	-
Kerosine-jet	828	847	(2.2)	816	854	(4.4)
Distillate fuel oil	2,821	3,187	(11.5)	2,906	3,328	(12.7)
Residual fuel oil	1,914	2,262	(15.4)	1,809	2,197	(17.7)
All other oils[4]	3,547	3,651	(2.8)	3,572	3,659	(2.4)
Reclassified[5]	- 239	- 288	(17.0)	- 264	- 304	(13.2)
Total domestic products supplied	14,987	15,943	(6.0)	15,004	15,919	(5.7)
Exports	860	804	7.0	848	817	3.8
Total products supplied	15,847	16,747	(5.4)	15,852	16,736	(5.3)
Supply:						
Domestic production:						
Crude oil[6]	8,654	8,727	(0.8)	8,668	8,652	0.2
Natural gas liquids	1,560	1,524	2.4	1,545	1,537	0.5
Other supply[7]	859	699	22.9	802	667	20.2
Total domestic supply	11,073	10,950	1.1	11,015	10,856	1.5
Imports:						
Crude oil, total	2,193 10/	2,790 10/	(21.4)	2,595 10/	3,151 10/	(17.6)
Canadian	231	193	19.7	217	192	13.0
Other	1,962	2,597	(24.5)	2,378	2,959	(19.6)
Products, total	1,825	1,742	4.8	1,724	1,659	3.9
Residual fuel oil	871	928	(6.1)	751	871	(13.8)
Other	954	814	17.2	973	788	23.5
Total imports	4,018	4,532	(11.3)	4,319	4,810	(10.2)
Total supply	15,091	15,482	(2.5)	15,334	15,666	(2.1)
Stock change, all oils	- 756	-1,265	XXXX	- 518	-1,070	XXXX
Refinery Operations						
Input to crude oil distillation units	11,115	11,623	(4.4)	11,352	11,836	(4.1)
Operable capacity	16,814	17,983	(6.5)	16,814	18,061	(6.9)
Refinery utilization (%)[8]	66.1%	64.6%	2.3	67.5%	65.5%	3.1
Crude oil runs	10,771	11,252	(4.3)	10,995	11,455	(4.0)

Stocks (millions bbls.)	1983		1982[2]	% Change from ...	
	Feb. 28[9]	Jan. 31[9]	Feb. 28	Previous Month	Year Ago
Crude oil 10/	361.0	358.8r/	371.0	0.6	(2.7)
Unfinished oils	109.0	110.6r/	116.9	(1.4)	(6.8)
Total motor gasoline**	250.5	246.9r/	262.1	1.5	(4.4)
Finished leaded motor gasoline*	104.8	102.4r/	109.8	2.3	(4.6)
Finished unleaded motor gasoline*	101.0	99.2	103.6	1.8	(2.5)
Naphtha-jet	5.8	6.0r/	6.0	(3.3)	(3.3)
Kerosine-jet	32.8	32.9r/	31.0	(0.3)	5.8
Distillate fuel oil	145.7	163.1r/	146.7	(10.7)	(0.7)
Residual fuel oil	53.4	62.2r/	58.1	(14.1)	(8.1)
All other oils	146.4	145.3r/	198.4	0.8	(26.2)
Total all oils	1,104.6	1,125.8r/	1,190.2	(1.9)	(7.2)

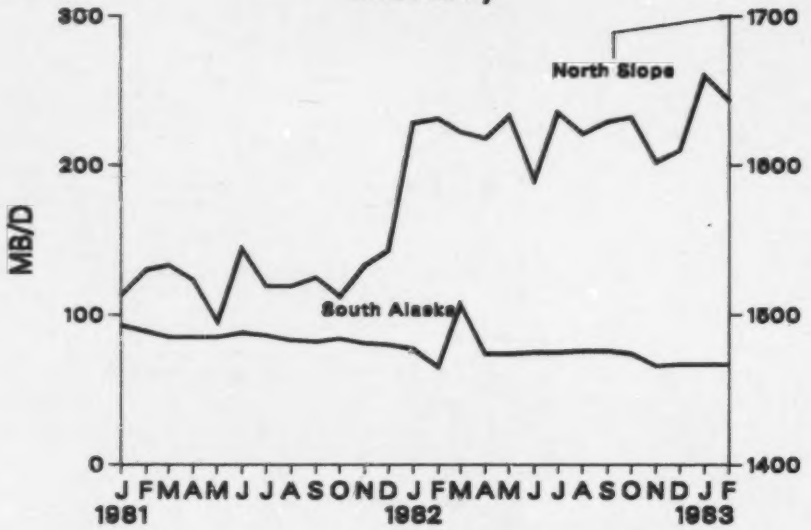
1/ Based on API estimated data converted to a monthly basis.
2/ Source: U.S. Department of Energy.
3/ Source: API.
4/ Includes crude losses.
5/ Beginning with January 1981, U.S. Department of Energy began using a new data collection system which encompasses a method to ascertain the amount of product reclassified during the production phase. So that there will be no double counting of these volumes, they are subtracted from total domestic products supplied.
6/ Includes lease condensate.
7/ Includes Unaccounted-for crude oil, Refinery input of other hydrocarbons, and Processing gain.
8/ Represents "Input to crude oil distillation units" as a percent of "Operable capacity."
9/ Derived by interpolating API weekly stocks data.
10/ Data do not include oil imported for the Strategic Petroleum Reserve (SPR) nor crude oil stocks held in the SPR.
R/ Revised.
* Included in motor gasoline.
** Differs slightly from U.S. Department of Energy figures since API uses refinery shipments to calculate demand.

Domestic Crude Oil Production
Total U.S. and Lower 48 States
annual average

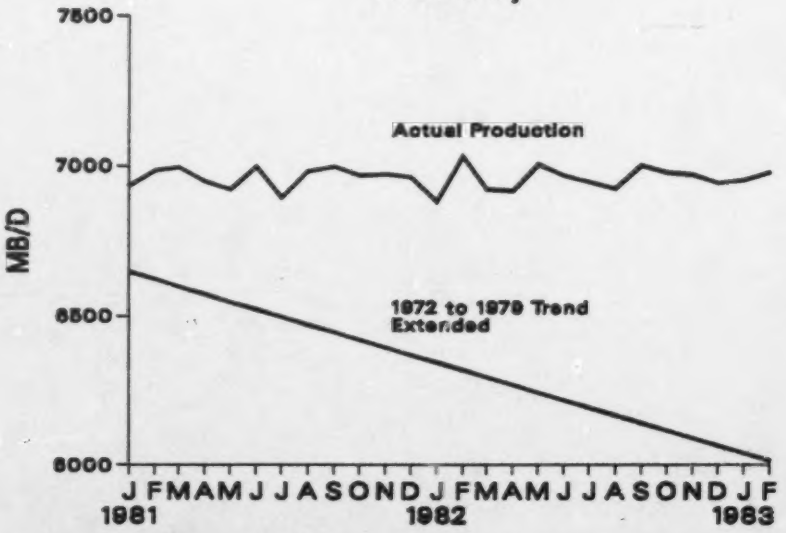


Source: Dept. of Energy and API, 1983 based on two months

Alaska Production
monthly



Lower 48 States
monthly



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American Petroleum Institute
2101 L Street, Northwest
Washington, D.C. 20037

Monthly Statistical Report

Prepared by the Statistics Department

Vol. 7, No. 3

APRIL 14, 1983

MARCH 1983

ESTIMATED U.S. PETROLEUM BALANCE

SUMMARY

Total domestic products supplied in March were about equal to last year's level, although the first quarter's decline was about 638 MBD (4.0%). Aided by what are believed to have been large purchases for secondary and end user storage in March, gasoline supplied levels for the quarter were almost 100 MBD above last year's. Thus, the net first quarter deficit in total products supplied domestically is primarily attributable to lower levels of fuel oil deliveries. The effects of abnormally warm weather, fuel switching at utilities, conservation, and the recession were all responsible for this decline.

Continued increase in Alaskan production and success in offsetting the natural production decline in the lower 48 with new production resulted in slightly higher first-quarter crude oil production levels than last year's. Mainly as a result of lower crude oil purchases, total imports continued to decline, reaching a quarterly level not experienced in more than a decade. Inventories at the end of the quarter, when adjusted for the change in reporting basis, were about 125 million barrels below last March's but are still above currently needed levels. Drilling activities continued their downward drift.

PRODUCTS SUPPLIED[1/]

The generally-stabilized trend of gasoline demand over the last year continued into the first quarter of 1983. During March and for the quarter as a whole "gasoline supplied" levels rose 130 MBD (2.0%) and 99 MBD (1.6%), respectively, over corresponding prior year periods. Most of March's increase appears to be related to movements in non-primary storage. Holders of secondary storage, who apparently postponed replenishment of inventories earlier in the year, are believed to have upped purchases in March. End users, who stood to gain by purchasing product prior to the April 1st effective date of the 5-cent excise tax increase, may also have been buyers of significantly larger than normal quantities of gasoline.

Despite a minor upturn in mid-month, March saw a further decline in gasoline pump prices (prices, of course, have risen in early April as a result of the five-cent per gallon excise tax increase). The near-offset in longer and shorter-term price effects appears to be mainly responsible for stabilizing gasoline demand, though excise tax considerations and replenishment of inventories are thought to have raised the level of gasoline actually supplied in March.

Unleaded gasoline's market share, at 51% of total, was virtually the same in March as last year, though for the quarter there was a year-to-year advance of approximately two percentage points. Lower scrappage rates and lagging new car sales are thought to be major factors in trimming the roughly six percentage point annual advance in market share of prior years.

Distillates declined 156 MBD (5.4%) in March compared to the 16% year-to-year drop of the first two months. Weather, which had been abnormally warm, turned colder and declines in truck and railroad traffic lessened. Also, users of diesel for "on highway" purposes, anticipating the 5-cent increase in excise tax on April 1st, apparently increased purchases by 50-100 MBD. Some replenishment of depleted secondary inventories seemingly also took place. However, the fact that the end of the heating season was at hand and that distillate prices had been relatively stable probably inhibited the size of such purchases.

The level of residual fuel oil supplied fell 15.5% in March and receded 20.8% (437 MBD) during the first quarter from last year's level. The decline was caused by a continuing loss of input share at utilities to other fuel sources, weather factors, and lower bunker fuel demand. Switch-back to oil from natural gas in the industrial sector may have provided a minor offset.

The changed market share picture in fuel sources used for the generation of electricity over the past several years has undoubtedly been a major factor in reducing the demand for residual fuel oil. Between 1978, the year preceding the Iranian crisis and the sharp price rises it triggered, and 1982, oil's share of total input at electric utilities has fallen from 17% to 7%, while coal's share rose from 43% to 52%. Nuclear fuel and natural gas retained about the same shares while hydroelectric's share rose slightly. In addition, the slack economy caused a 2% contraction in the level of electricity generated in 1982, the first in decades. Exhibit I displays these trends, which are believed to have continued into the first quarter of 1983. The market share decline since last year translates into a more than 250 MBD loss in residual fuel oil demand by utilities. In addition, total electrical generation suffered a further loss because of warmer weather in early 1983 which dampened demand for heating purposes.

The demand decrease for bunker fuel during the first quarter this year versus last year is estimated to be 90 MBD. Bunker fuel sales dropped about 27 percent in 1982 from 1980 levels. This was, in part, the result of the loss of a U.S. price advantage over foreign sources that had prevailed in 1980 and early 1981. The falling level of worldwide shipping activity, down some 10 percent in 1982 alone, also continues to be a major factor responsible for the decline in bunker fuel demand. Decreased shipping activity has continued into 1983.

Rising natural gas prices, combined with declining residual fuel oil prices, have narrowed, and in many instances closed, the gap that had existed between these two fuels and had caused switching from residual fuel oil to natural gas. However, natural gas suppliers have sought short-term approval from regulatory authorities to offer lower industrial gas prices. At the same time, some suppliers have been attempting to renegotiate, if not abrogate, contracts with producers containing "take-or-pay" or similar penalty clauses. While there is insufficient evidence to permit any precise assessment of the net effect of these changes, the share of natural gas in the industrial market may have decreased slightly.

Kerosine jet fuel supplied during the first quarter of 1983 was about 5.6% below the level of the corresponding 1982 period. Official "miles flown" data are not yet available for that period. However, revenue passenger miles climbed during the first quarter, many airlines reporting 10% - 20% year-to-year gains. While load factors apparently improved, partly as a result of proliferating incentive fares, miles flown are likely to have increased, indicating that fuel efficiency has continued to improve.

(In millions of B/D)	MARCH ESTIMATES			YEAR-TO-DATE ESTIMATES		
	1983	1982	% Change	1983	1982	% Change
—Total domestic products supplied	15.5	15.6	(0.3)	15.2	15.8	(4.0)
—Motor gasoline supplied	6.7	6.6	2.0	6.3	6.2	1.6
—Distillate fuel oil supplied	2.7	2.9	(5.4)	2.8	3.2	(12.7)
—Residual fuel oil supplied	1.6	1.9	(15.5)	1.7	2.1	(20.8)

SUPPLY[1/]

Total supply fell 687 MBD (4.4%) during 1983's first quarter compared with a year ago, as a 737 MBD decline in imports was offset only minimally by a 50 MBD increase in domestic supply.

Crude oil production in March continued to exceed prior year levels, rising almost 1%. Alaskan production was about the same as last year, while lower 48 production rose slightly. Virtual stabilization of crude oil production has followed January 1981's decontrol of oil and, at this point, production in the lower 48 is about a million barrels per day higher than would have been the case, had the downward trend of the seventies continued.

First quarter imports, down almost 16% from last year's levels, are about equal to first quarter 1970 levels and are down almost 60% from the highs established in 1977. They now represent less than 26% of total domestic demand. On a net basis, imports have fallen from 47% in 1977 and 41% in 1980 (first quarter data) to a current 20% of demand. The shift towards non-OPEC sources has also continued, with Mexico now the major source of petroleum imports to the U.S., accounting for an estimated 16% share of total U.S. petroleum imports. As shown in Exhibit II, a greater proportion of these imports are now in the form of products.

Inventories fell about 65 million barrels in March. Though March inventory changes have a wide variation, this drawdown is much larger than the normal drawdown of around 10 million barrels. This primarily reflected price uncertainty in world markets earlier in the year and an effort to bring stocks into a more normal relationship with demand. However, some replenishment of secondary and tertiary storage also occurred last month.

The Department of Energy has just added a number of companies to its reporting universe. The API has revised its reporting program to conform to the new DOE basis and the estimate of total inventories was increased by more than 29 million barrels as of the end of March. Thus, while the attached table shows an inventory drop of about 95 million barrels since last March, the drop is roughly 125 million barrels if account is taken of the change in the reporting universe. About one-third of the 125 million barrel decrease simply reflects the year-to-year reduction in product demand; the remainder represents adjustments for prior years' large inventory build-ups and March's drawdown to satisfy suddenly-increasing levels of deliveries.

We continue to believe that inventories are more than adequate relative to current demand. The excess inventory is concentrated almost entirely in crude stocks which may still be 50-75 million barrels above needed levels. At the end of the first quarter, total inventories, adjusted for the more than 29 million barrel change necessitated by DOE's inventory modifications, represented 68 days of supply. As shown in Exhibit III, this is near the high of the range experienced in the seventies.

For reasons cited earlier, primary gasoline inventories fell about 19 million barrels versus an average March drop of about 4 million barrels. The large drop in gasoline inventories in March was more pronounced in some areas than in others. For example, the percentage decline in PADD I was about twice as great as for the country as a whole, while the PADD III change was minimal. These differences are a reflection of the dislocations that apparently resulted from the rapid buildup in secondary and tertiary storage and caused temporary market tightness in some areas. Distillate inventories fell 23 million barrels, twice the average of the mid-seventies. Gasoline inventories represent about 35 days of supply, about normal for this time of year, while distillate days of supply, at 47 days, are still near the top of the range. Residual fuel oil stocks' 7 million barrel decline in March, twice the highest drawdown since the mid-seventies, may well be a reflection of some pick-up, however modest, in economic activity, though somewhat lower production and import levels also played a part. Crude oil inventories fell 16 million barrels in March, but are still well above needed levels.

Input to crude oil distillation units was about 300 MBD below last March. Production levels have been declining to reflect lower demand and reductions in inventories. However, as Exhibit IV shows for the three major products, an increasing level of demand is being satisfied by refinery production as opposed to imports or stock drawdowns. In the two-year period between 1980 and 1982, the percentage of demand so satisfied rose from about 87% to 92%.

Refinery utilization dropped steadily since 1980, but for the past year has stabilized in the 65% - 70% range. However, operable capacity has dropped about 2 million barrels in that interval, as declining demand continues to force reduction in refinery operations. Based on capacity in actual operation, moreover, utilization for the first quarter of 1983 would have been about 74% versus the 67% figure if total operable capacity is used as basis for rate computation.

A clouded price and tax outlook continues to affect drilling activities adversely. Active rigs in March fell 48% versus last year and 54% versus the January 1982 seasonally-adjusted high. The late March weekly count dropped below 2000 for the first time in almost four years. March drilling data are not yet available. However, during the first two months of the year, the reported number of wells completed dropped about 11% versus the corresponding 1982 period. The downward trend of these two indicators continues to exhibit the close, though time-lagged, correspondence one would expect.

(In millions of B/D)	MARCH ESTIMATES			YEAR-TO-DATE ESTIMATES		
	1983	1982	% Change	1983	1982	% Change
—Total supply	14.3	15.2	(6.1)	14.8	15.5	(4.4)
—Crude production[2/]	8.7	8.7	0.9	8.7	8.7	0.2
—Crude oil imports[3/4/]	2.0	2.7	(23.5)	2.3	3.0	(22.2)
—Product imports	1.5	1.6	(8.5)	1.6	1.6	(4.4)

1/ Total supply, i.e., production plus imports adjusted for net stock change is equal to total products supplied from primary storage. Total products supplied from primary storage less exports is equal to total domestic products supplied. Information contained in this report is derived from information published in the API Weekly Bulletin and is based on historical analysis of the industry. All data reflect the most current information available to the API and include all previously published revisions.

2/ Includes lease condensate.

3/ Beginning with January 1977, the U.S. Department of Energy began reporting crude oil imports as of the date of importation. Previously, this data, with the exception of Canadian crude imports, was reported as of the date it was received at the refinery. This change may affect both the level of crude oil imports and crude oil stocks. API estimates of these data may, therefore, differ slightly from those of the U.S. Department of Energy.

4/ API data do not include crude oil imported for the Strategic Petroleum Reserve (SPR) nor crude oil stocks held in the SPR (according to the U.S. Department of Energy, the SPR held approximately 312 million barrels as of March 31, 1983).

ESTIMATED UNITED STATES PETROLEUM BALANCE

(Daily Average in Thousands of 42 Gallon Barrels)

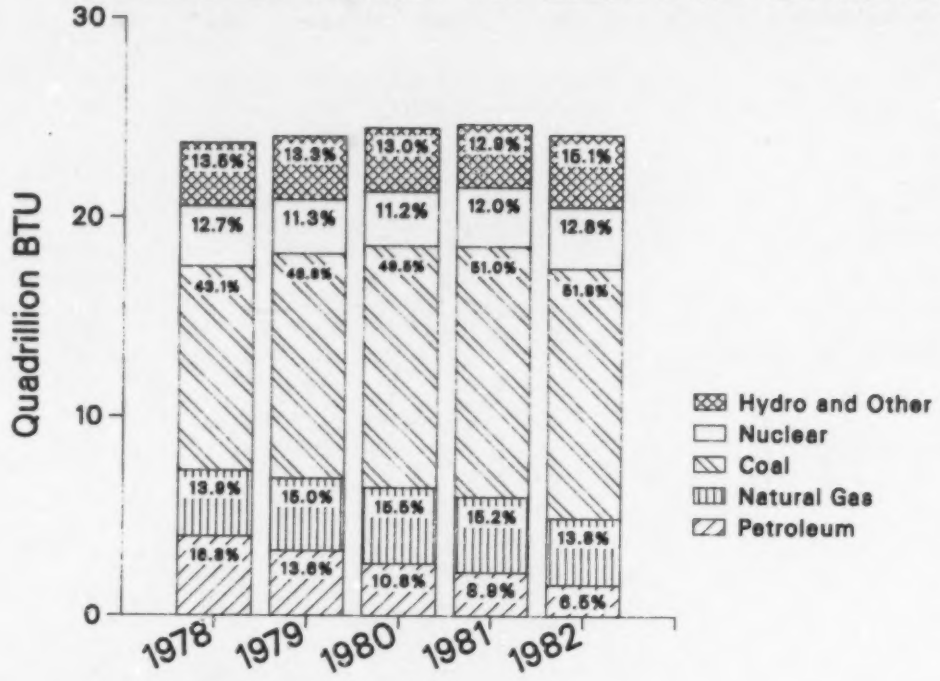
Supply/Products Supply From Primary Storage	MARCH			YEAR-TO-DATE		
	1983[1]	1982[2]	% Change	1983[3R]	1982[2]	% Change
Products Supplied:						
Total motor gasoline	6,742	6,612	2.0	6,309	6,210	1.6
Finished leaded motor gasoline*	3,290	3,216	2.3	2,935	3,011	(2.5)
Finished unleaded motor gasoline*	3,452	3,396	1.6	3,374	3,199	5.5
Naphtha-jet	175	206	(15.0)	184	194	(5.2)
Kerosine-jet	774	772	0.3	780	826	(5.6)
Distillate fuel oil	2,725	2,881	(5.4)	2,771	3,174	(12.7)
Residual fuel oil	1,616	1,912	(15.5)	1,662	2,099	(20.8)
All other oils[4]	3,744	3,494	7.2	3,718	3,601	3.2
Reclassified[5]	- 257	- 312	(17.6)	- 265	- 307	(13.7)
Total domestic products supplied	15,519	15,565	(0.3)	15,159	15,797	(4.0)
Exports	875	882	(0.8)	904	839	7.7
Total products supplied	16,394	16,447	(0.3)	16,063	16,636	(3.4)
Supply:						
Domestic production:						
Crude oil[6]	8,729	8,650	0.9	8,673	8,652	0.2
Natural gas liquids	1,562	1,570	(0.5)	1,598	1,548	3.2
Other supply[7]	495	731	(32.3)	668	689	(3.0)
Total domestic supply	10,786	10,951	(1.5)	10,939	10,889	0.5
Imports:						
Crude oil, total	2,042[10/]	2,671[10/]	(23.5)	2,322[10/]	2,986[10/]	(22.2)
Canadian	226	168	34.5	242	184	31.5
Other	1,816	2,503	(27.4)	2,080	2,802	(25.8)
Products, total	1,469	1,606	(8.5)	1,568	1,641	(4.4)
Residual fuel oil	716	910	(21.3)	755	885	(14.7)
Other	753	696	8.2	813	756	7.5
Total imports	3,511	4,277	(17.9)	3,890	4,627	(15.9)
Total supply	14,297	15,228	(6.1)	14,829	15,516	(4.4)
Stock change, all oils	-2,097	-1,219	XXXX	-1,234	-1,120	XXXX
Refinery Operations						
Input to crude oil distillation units	11,341	11,668	(2.8)	11,299	11,778	(4.1)
Operable capacity	16,814	17,971	(6.4)	16,818	18,030	(6.7)
Refinery utilization (%)[8]	67.4%	64.9%	3.9	67.2%	65.3%	2.9
Crude oil runs	11,001	11,277	(2.4)	10,953	11,394	(3.9)

Stocks (millions bbls.)	1983[11/]		1982[2]	% Change from ...	
	Mar. 31[9]	Feb. 28[9]	Mar. 31	Previous Month	Year Ago
Crude oil [10/]	344.1	360.0r/	365.7	(4.4)	(5.9)
Unfinished oils	108.1	109.0	115.8	(0.8)	(6.6)
Total motor gasoline**	233.8	253.0r/	247.9	(7.6)	(5.7)
Finished leaded motor gasoline*	93.3	104.5r/	102.1	(10.7)	(8.6)
Finished unleaded motor gasoline*	95.3	100.4r/	96.7	(5.1)	(1.4)
Naphtha-jet	7.9	7.3r/	6.4	8.2	23.4
Kerosine-jet	36.4	34.5r/	36.1	5.5	0.8
Distillate fuel oil	127.1	150.4r/	127.7	(15.5)	(0.5)
Residual fuel oil	47.5	54.9r/	57.3	(13.5)	(17.1)
All other oils	152.2	153.0r/	195.5	(0.5)	(22.1)
Total all oils	1,057.1	1,122.1r/	1,152.4	(5.8)	(8.3)

1/ Based on API estimated data converted to a monthly basis.
2/ Source: U.S. Department of Energy.
3/ Source: January, U.S. Department of Energy, February-March, API.
4/ Includes crude losses.
5/ Beginning with January 1981, U.S. Department of Energy began using a new data collection system which encompasses a method to ascertain the amount of product reclassified during the production phase. So that there will be no double counting of these volumes, they are subtracted from total domestic products supplied.
6/ Includes lease condensate.
7/ Includes Unaccounted-for crude oil, Refinery input of other hydrocarbons, and Processing gain.
8/ Represents "Input to crude oil distillation units" as a percent of "Operable capacity."
9/ Derived by interpolating API weekly stocks data.
10/ Data do not include oil imported for the Strategic Petroleum Reserve (SPR) nor crude oil stocks held in the SPR.
11/ As of January 1, 1983, U.S. Department of Energy (DOE) added new reporting companies in the bulk terminal and pipeline categories which resulted in an expanded reporting universe. The API has revised the stock levels for its weekly program to conform to the new DOE levels. These revisions are reflected in the presented data and represent an increase estimated to be 29 million barrels in the total stock level as of March 31, 1983, when compared to the old basis. Of the 29 million barrels 27% is motor gasoline, 21% is distillate, 6% is residual, 5% is jet-fuel naphtha, 3% is jet-fuel kerosine, 1% is crude oil, and 37% for other products.
R/ Revised.
* Included in motor gasoline.
** Includes finished leaded, finished unleaded, and motor gasoline blending components stocks.

EXHIBIT I

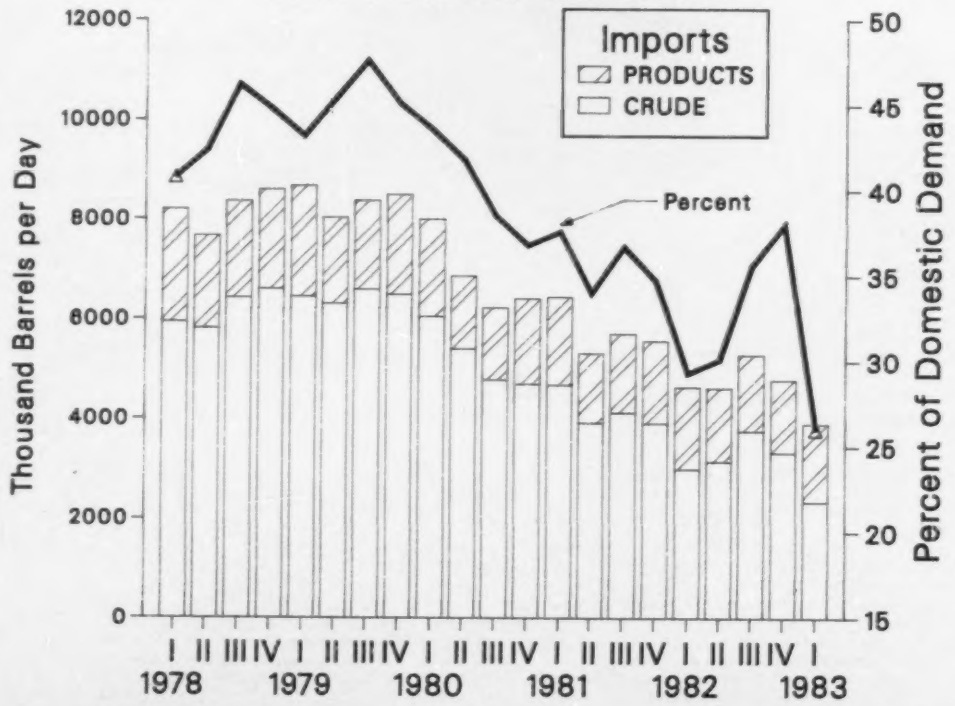
ENERGY INPUT AT ELECTRIC UTILITIES



Source: Department of Energy

EXHIBIT II

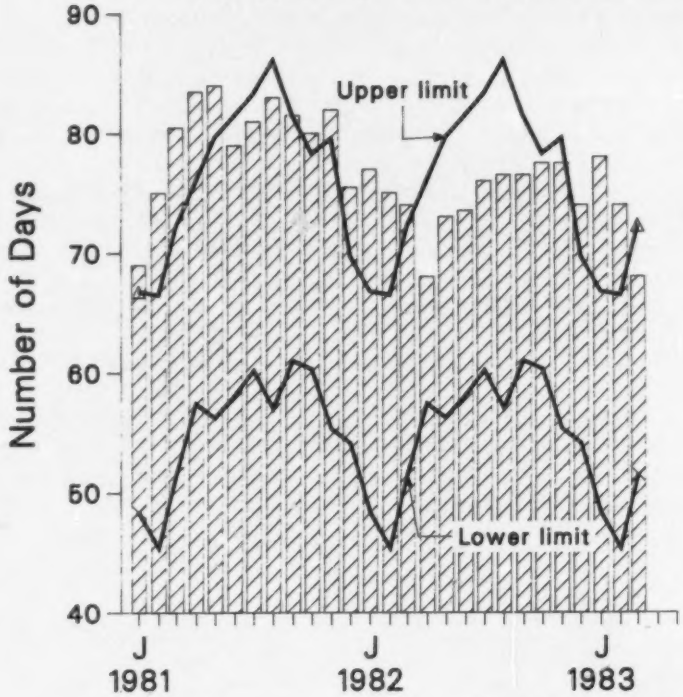
Imports of Crude Oil and Refined Products



SOURCE: DEPT. OF ENERGY AND API

EXHIBIT III

TOTAL PETROLEUM INVENTORIES
NUMBER OF DAYS SUPPLY

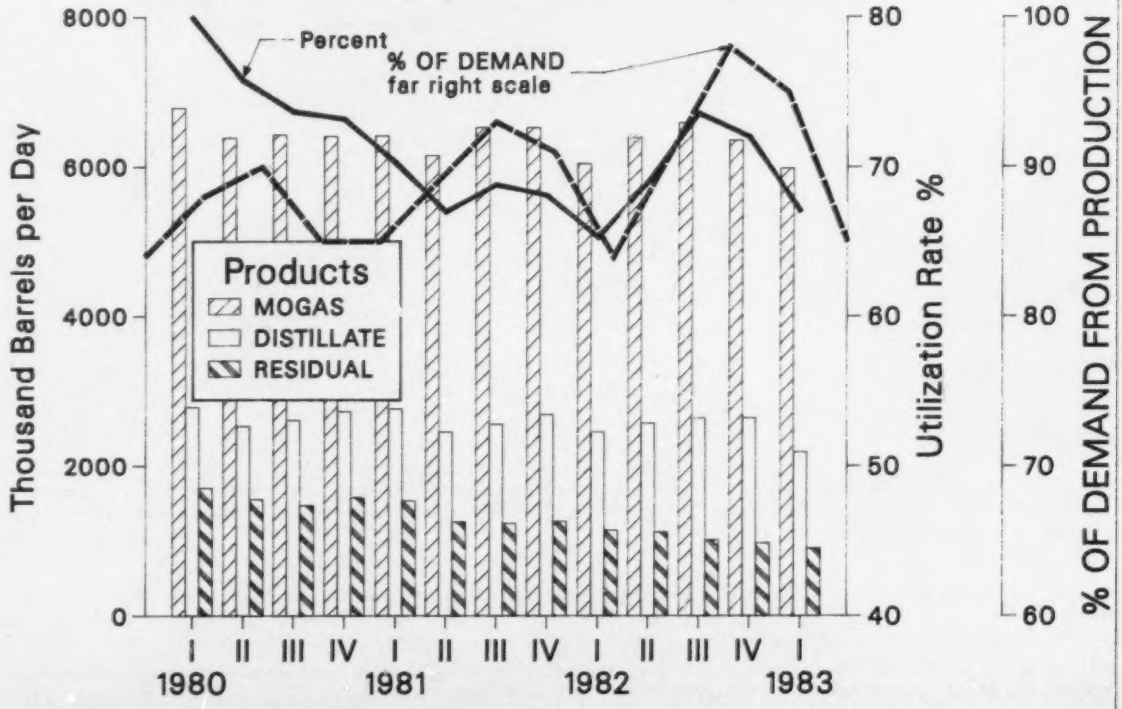


SOURCE: DEPT. OF ENERGY AND API

Historical Range based on highest and lowest values between 1973 and 1980

EXHIBIT IV

Refinery Production of Major Products and Refinery Utilization Rate



SOURCE: DEPT. OF ENERGY AND API

American Petroleum Institute
2101 L Street, Northwest
Washington, D.C. 20037

Monthly Statistical Report

Prepared by the Statistics Department **Vol. 7, No. 4**

MAY 19, 1983 **APRIL 1983**

ESTIMATED U.S. PETROLEUM BALANCE

SUMMARY

Total domestic products supplied in April were 408 MBD (2.5%) below last year's level. This is a smaller deficit than in the first quarter mainly because of relatively stronger demand for residual fuel oil, most likely related to a strengthening economy. It appears that build-up of light product inventories in secondary and tertiary storage, however, may have proceeded at a lesser pace than last year, contributing to the decrease in total products supplied.

Crude oil production continued to maintain its lead over last year's level, with both Alaska and the lower 48 contributing to the increase. Total imports, up 19% from average first-quarter levels, seasonally adjusted, edged ahead of last year's. Inventories dropped about 19 million barrels during April but continue to be adequate to meet current demand levels. Drilling activities showed a mixed picture. Well completions, which had been about the same as last year in March, showed a significant decline in April; the rig count, while far below last year, steadied during the month.

PRODUCTS SUPPLIED[1/]

The level of gasoline supplied fell 290 MBD (4.2%) in April compared with a year ago. Last April, however, had the highest daily rate of gasoline supplied during any month in 1982 and was roughly 250 MBD above the prevailing trend; this year, upward departure from trend was minimal. While divergence in 1982 was likely caused by replenishment of secondary storage, a greater part of this process this year apparently had already taken place in March. These non-primary inventory changes, however, do not affect the longer-term trend of gasoline demand, which, as attached Exhibit A indicates, appears to have stabilized. Gasoline supplied levels during the first four months this year are only marginally below those for the corresponding 1982 period.

Gasoline pump prices, which had been falling almost uninterruptedly since March 1981, rose in April from the combined result of increases in wholesale prices and higher excise taxes. The April pump price, adjusted for inflation, is, however, still about 27¢ (20%) below the March 1981 high point.

Unleaded gasoline's market share rose to almost 55%, about 4 percentage points above last year. This rate of increase is higher than has recently been the case.

Distillates supplied in April fell about 4.6% (136 MBD). This is the smallest decline so far this year. This was partly due to the fact that, while first-quarter levels were below trend in both years, the 1983 departure was far greater (see attached Exhibit B). On the other hand, the levels of truck and rail traffic, which had been showing some lesser year-to-year declines of late, experienced further slippage in April.

The level of residual fuel oil supplied dropped 8.9% (162 MBD) in April compared with last year. This is less than half the rate of decline that prevailed during the first quarter. The fact that April was 400 MBD above trend is a further indication that economic activity is picking up. Lower bunker fuel demand and reduced use at utilities, however, is still affecting total residual fuel oil demand levels. Worldwide shipping activity has been on the downtrend. Oil trade, for example, has dropped to levels existing prior to the seventies. Thus, the declining bunker fuel demand, which fell an estimated 80 MBD in 1982, is believed to have continued into 1983. Use of residual fuel oil as a source for electricity generation also dropped some 250 MBD between 1981 and 1982. Early indications are that this trend continued into 1983.

Data are not yet available to determine the impact of gas distributors' price reductions on market share. However, attempts by distributors to improve their competitive position through renegotiation of contract provisions are apparently being intensified. The fact that a steadily-growing percentage of industrial boilers can be promptly switched from one fuel to another is heightening competition between natural gas and residual fuel oil suppliers, as the price gap between these fuels has narrowed and, in many cases, disappeared.

Recent revival of industrial activity may be sharpening this competition further. After sliding almost uninterruptedly since mid-1981, the level of industrial production finally turned upward at the end of 1982 and has been on the increase ever since. The levels of natural gas and residual fuel oil supplied both declined during 1981 and 1982. However, the decrease in natural gas consumption was much larger (almost ten times) in 1982 than in 1981. But petroleum's loss in 1982 was only about one-third the decline in 1981. It is no coincidence that these scenarios unfolded as the gap between residual fuel oil prices and natural gas narrowed significantly in 1982.

Kerosine jet fuel was supplied at a rate about 8% higher in April than last year, but the level on a cumulative basis trails the first four months of 1982 by about 2%. Revenue passenger miles (domestic service), an indicator of overall air traffic trends, rose 11% during the first quarter of 1983 versus the corresponding 1982 quarter. Bookings are reported to have been heavy in April, indicating that the upward trend persisted in April. "Miles flown" data are not available beyond the first two months of 1983, when they showed a 1% increase. While load factors have improved somewhat, the large increase in revenue passenger miles apparently means that "miles flown" continued to increase and, consequently, that engine efficiency continues to improve.

(In millions of B/D)	APRIL ESTIMATES			YEAR-TO-DATE ESTIMATES		
	1983	1982	% Change	1983	1982	% Change
—Total domestic products supplied	15.6	16.1	(2.5)	15.2	15.9	(4.3)
—Motor gasoline supplied	6.6	6.9	(4.2)	6.3	6.4	(0.6)
—Distillate fuel oil supplied	2.8	3.0	(4.6)	2.8	3.1	(10.5)
—Residual fuel oil supplied	1.7	1.8	(8.9)	1.6	2.0	(19.4)

SUPPLY[1/]

Total April supply exceeded last year's level by 1 million barrels per day, almost exclusively because of higher total domestic supply.

Crude oil production in April increased by more than 100 MBD over year-ago levels. While Alaskan production rose slightly, most of the increase occurred in the lower 48. Increasingly, producers in the lower 48 have apparently been able to offset the natural decline in existing fields with new production and, as Exhibit C shows, year-to-year production changes have turned positive since mid-1981.

Total imports for April were minimally ahead of last year's levels but were about 15% below last year's for the first four months of the year. The principal source of U.S. crude oil imports continues to be Mexico, followed by Canada, Venezuela, and the United Kingdom; this contrasts with a top ranking for Saudi Arabia, followed by Nigeria, Canada, and Mexico early last year (2 months' data). In fact, Mexico has now been the leading U.S. crude supplier since mid-1982.

The extent of the United States' dependency on foreign petroleum imports is a closely-watched gauge. If imports of gasoline, distillates, and residual fuel oil were at any time not readily available, current exports of these products could be diverted to the domestic market. The degree of dependency should, therefore, be more realistically measured by total imports less the exports of these products, rather than as a function of gross imports alone. On that basis, dependency for the first four months of the year amounted to 23%, a little over half the 39% that prevailed in the mid-seventies.

Inventories fell about 19 million barrels in April, compared with a normal April build-up of about 4 million barrels. However, with refinery utilization at about 70% and crude inventories exceeding current requirements by at least 60 million barrels, product inventories are considered adequate to meet current demand levels. Gasoline inventories, at 34 days' supply, are about equal to April's experience of the late-seventies. Distillate levels, while somewhat lower than last year, represent 38 days of supply. While this is below the historical average, it is considered adequate in light of high crude inventories and 5 million barrels of available refinery capacity.

An uncertain tax outlook and continuing, though currently diminished, price uncertainty still affect drilling-related activities. The rig count, just over 1800 in mid-April, has increased in subsequent weeks, but, at the April average of about 1,846, is still only slightly more than half the April 1982 level. Wells completed, which were roughly equal to the prior-year level in March, fell 14% in April versus a year ago.

(In millions of B/D)	APRIL ESTIMATES			YEAR-TO-DATE ESTIMATES		
	1983	1982	% Change	1983	1982	% Change
—Total supply	15.9	14.9	6.7	15.0	15.4	(2.3)
—Crude production[2]	8.7	8.6	1.2	8.7	8.6	0.5
—Crude oil imports[3,4]	2.6	2.6	1.0	2.4	2.9	(18.0)
—Product imports	1.5	1.5	2.7	1.5	1.6	(8.7)

1/ Total supply, i.e., production plus imports adjusted for net stock change is equal to total products supplied from primary storage. Total products supplied from primary storage less exports is equal to total domestic products supplied. Information contained in this report is derived from information published in the API Weekly Bulletin and is based on historical analysis of the industry. All data reflect the most current information available to the API and include all previously published revisions.

2/ Includes lease condensate.

3/ Beginning with January 1977, the U.S. Department of Energy began reporting crude oil imports as of the date of importation. Previously, this data, with the exception of Canadian crude imports, was reported as of the date it was received at the refinery. This change may affect both the level of crude oil imports and crude oil stocks. API estimates of these data may, therefore, differ slightly from those of the U.S. Department of Energy.

4/ API data do not include crude oil imported for the Strategic Petroleum Reserve (SPR) nor crude oil stocks held in the SPR (according to the U.S. Department of Energy, the SPR held approximately 318 million barrels as of April 30, 1983).

ESTIMATED UNITED STATES PETROLEUM BALANCE

(Daily Average in Thousands of 42 Gallon Barrels)

Supply/Products Supply From Primary Storage	APRIL			YEAR-TO-DATE		
	1983[1]	1982[2]	% Change	1983[3R]	1982[2]	% Change
Products Supplied:						
Total motor gasoline	6,600	6,890	(4.2)	6,342	6,380	(0.6)
Finished leaded motor gasoline*	2,976	3,396	(12.4)	2,918	3,107	(6.1)
Finished unleaded motor gasoline*	3,624	3,494	3.7	3,424	3,273	4.6
Naphtha-jet	221	221	-	203	201	1.0
Kerosine-jet	845	780	8.3	797	814	(2.1)
Distillate fuel oil	2,848	2,984	(4.6)	2,790	3,118	(10.5)
Residual fuel oil	1,653	1,815	(8.9)	1,603	1,988	(19.4)
All other oils[4]	3,731	3,667	1.7	3,700	3,666	0.9
Reclassified[5]	- 256	- 307	(16.6)	- 253	- 307	(17.6)
Total domestic products supplied	15,642	16,050	(2.5)	15,182	15,860	(4.3)
Exports	900	786	14.5	904	826	9.4
Total products supplied	16,542	16,836	(1.7)	16,086	16,686	(3.6)
Supply:						
Domestic production:						
Crude oil[6]	8,712	8,608	1.2	8,684	8,641	0.5
Natural gas liquids	1,618	1,588	1.9	1,609	1,558	3.3
Other supply[7]	1,410	608	131.9	886	669	32.4
Total domestic supply	11,740	10,804	8.7	11,179	10,868	2.9
Imports:						
Crude oil, total	2,648 10/	2,623 10/	1.0	2,375 10/	2,895 10/	(18.0)
Canadian	217	178	21.9	236	182	29.7
Other	2,431	2,445	(0.6)	2,139	2,713	(21.2)
Products, total	1,514	1,474	2.7	1,460	1,599	(8.7)
Residual fuel oil	735	762	(3.5)	695	854	(18.6)
Other	779	712	9.4	765	745	2.7
Total imports	4,162	4,097	1.6	3,835	4,494	(14.7)
Total supply	15,902	14,901	6.7	15,014	15,362	(2.3)
Stock change, all oils	- 640	-1,935	XXXX	-1,072	-1,324	XXXX
Refinery Operations						
Input to crude oil distillation units	11,806	11,765	0.3	11,399	11,775	(3.2)
Operable capacity	16,854	17,967	(6.2)	16,831	18,014	(6.6)
Refinery utilization (%)[8]	70.0%	65.5%	6.9	67.7%	65.4%	3.5
Crude oil runs	11,518	11,386	1.2	11,063	11,392	(2.9)

Stocks (millions bbls.)	1983		1982[2]	% Change from ...	
	Apr. 30[9]	Mar. 31[9]	Apr. 30	Previous Month	Year Ago
Crude oil 10/	358.1	344.1	355.5	4.1	0.7
Unfinished oils	114.5	108.1	118.9	5.9	(3.7)
Total motor gasoline**	225.8	233.8	222.8	(3.4)	1.3
Finished leaded motor gasoline*	91.4	93.3	90.6	(2.0)	0.9
Finished unleaded motor gasoline*	93.0	95.3	88.9	(2.4)	4.6
Naphtha-jet	6.9	7.9	6.4	(12.7)	7.8
Kerosine-jet	36.0	36.4	37.8	(1.1)	(4.8)
Distillate fuel oil	107.5	127.1	108.8	(15.4)	(1.2)
Residual fuel oil	44.3	47.5	53.6	(6.7)	(17.4)
All other oils	146.4	153.8r/	190.5	(4.8)	(23.1)
Total all oils	1,039.5	1,058.7r/	1,094.3	(1.8)	(5.0)

1/ Based on API estimated data converted to a monthly basis.
2/ Source: U.S. Department of Energy.
3/ Source: January-February, U.S. Department of Energy, March-April, API.
4/ Includes crude losses.
5/ Beginning with January 1981, U.S. Department of Energy began using a new data collection system which encompasses a method to ascertain the amount of product reclassified during the production phase. So that there will be no double counting of these volumes, they are subtracted from total domestic products supplied.
6/ Includes lease condensate.
7/ Includes Unaccounted-for crude oil, Refinery input of other hydrocarbons, and Processing gain.
8/ Represents "Input to crude oil distillation units" as a percent of "Operable capacity."
9/ Derived by interpolating API weekly stocks data.
10/ Data do not include oil imported for the Strategic Petroleum Reserve (SPR) nor crude oil stocks held in the SPR.
R/ Revised.
* Included in motor gasoline.
** Includes finished leaded, finished unleaded, and motor gasoline blending components stocks.

EXHIBIT A
SEASONALLY ADJUSTED MOTOR GASOLINE SUPPLIED

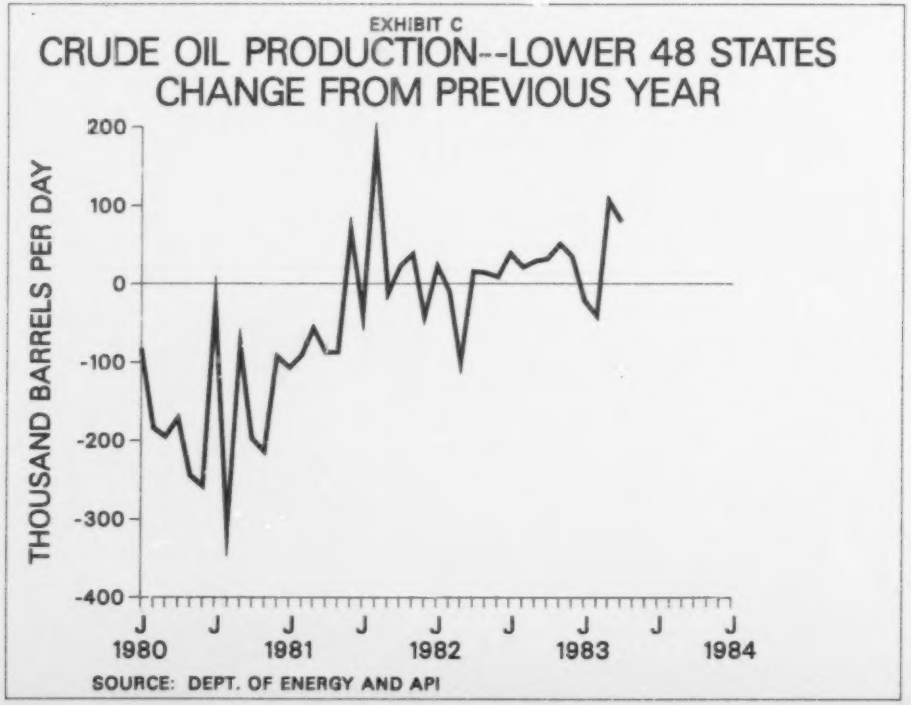
Sources: Department of Energy, American Petroleum Institute

EXHIBIT B
SEASONALLY AND WEATHER ADJUSTED DISTILLATE SUPPLIED

Sources: Department of Energy, American Petroleum Institute

4

EXHIBIT C
CRUDE OIL PRODUCTION--LOWER 48 STATES
CHANGE FROM PREVIOUS YEAR



SOURCE: DEPT. OF ENERGY AND API

American Petroleum Institute
2101 L Street, Northwest
Washington, D.C. 20037

Monthly Statistical Report

Prepared by the Statistics Department

Vol. 7, No. 5

JUNE 16, 1983

MAY 1983

ESTIMATED U.S. PETROLEUM BALANCE

SUMMARY

Total domestic products supplied fell 544 MBD (3.7%) in May compared with year-ago levels. All major product categories contributed to the decline though gasoline was almost equal to last year's level.

Crude oil production was minimally below last May's but is slightly ahead of last year on a year-to-date basis. This is in line with performance since mid-1981 when year-to-year comparisons, negative for a decade of price controls, first started to turn positive. Imports were somewhat below last May's, but, on a deseasonalized basis, advanced some 30% above average first-quarter levels. There was no further liquidation of inventories during May, as inventories, about 9 million barrels ahead of last month, advanced in the normal seasonal manner. Rig activity increased over April levels. Well data are not yet available for May; well completions reported fell 9% during the first four months compared with prior-year levels.

PRODUCTS SUPPLIED[1/]

Gasoline was supplied at a level slightly below last year's. Month-to-month divergences, arising primarily from changes in secondary storage, have been substantial of late. However, underlying demand, which had been relatively stable since mid-1981, may have strengthened somewhat in recent months.

Gasoline prices, after advancing minimally in the early part of May, stabilized in mid-month. Adjusted for inflation, May pump prices were still about 25¢ (18%) below their early 1981 highs.

Unleaded gasoline's market share for the first five months averaged 54.1%, less than three percentage points above the level for the corresponding prior-year period. The slump in auto sales over the past two years, lower scrappage rates, and improved mileage of new cars, are among the reasons advanced for the greatly-decreased rate of unleaded's advance in market share. Historically, the year-to-year gain had averaged 5-6 percentage points.

The level of distillates supplied fell 148 MBD (6.1%) in May compared with year-earlier levels. For the year-to-date, distillate deliveries trail last year's by about 7%, adjusted for weather. It thus appears that the prior-years' downward trend has not been arrested. While the economy has had an adverse effect on diesel demand, structural changes in demand caused by price-induced conservation are likely to have been the major contributor to declining demand.

Residual fuel oil was supplied at a 211 MBD (14.1%) lower level than last May. The same forces that have been producing low levels of residual fuel oil deliveries for some time, such as low economic activity and price-induced conservation and fuel switching, continue at work Electricity generation is still below last year's levels, and switching to alternate fuel sources continues. We estimate that utilities' residual fuel oil use dropped about 250 MBD compared with last year (2 months' data), a decline that is believed to have continued at about the same rate into May. Bunker fuel sales, too, are still declining, though at a slightly lesser rate—perhaps around 60 MBD from last May. Due to substantial fuel-switching capacity, the industrial users have benefited from major competition between residual fuel oil and natural gas. There appear to be intense efforts by natural gas suppliers to stem recent losses to residual fuel oil. This is evidenced by mounting reports of natural gas prices having been lowered, mainly to those customers in a position to switch fuel sources at will, and gas distributors' continued efforts to renegotiate contracts with producers. At this point, there are insufficient data available to permit any accurate estimate of the state of this interfuel contest. It appears, however, that residual fuel oil may be benefiting slightly from this competition.

Kerosine jet fuel deliveries are down about 1% from last year's level for May and for the year to date. Miles flown, however, increased about 2%, indicating that engine efficiency continued to improve.

Energy conservation has apparently affected all products and market segments. In many cases, conservation efforts had been underway for many years, but the substantial petroleum price increases of recent years intensified the need. As evidenced by the results of API's recent Energy Conservation Survey, the petroleum industry has had major success in its energy conservation efforts. During 1982, refineries, on average, used 23% less energy per barrel processed than they would have used at 1972 efficiency levels. This is about 375 thousand barrels per day of oil equivalent—about two-thirds actually consisting of petroleum products. As the survey methodology filters out changes in usage caused by input variances and other operational factors, this conservation appears to be entirely price-related.

(In millions of B/D)	MAY ESTIMATES			YEAR-TO-DATE ESTIMATES		
	1983	1982	% Change	1983	1982	% Change
—Total domestic products supplied	14.3	14.8	(3.7)	15.0	15.7	(4.2)
—Motor gasoline supplied	6.6	6.7	(0.6)	6.4	6.4	(0.2)
—Distillate fuel oil supplied	2.3	2.4	(6.1)	2.7	3.0	(8.6)
—Residual fuel oil supplied	1.3	1.5	(14.1)	1.5	1.9	(19.0)

SUPPLY[1/]

Total May supply declined 119 MBD compared with last year, or less than 1%. Almost the entire decrease resulted from somewhat lower import levels.

Domestic crude oil production was minimally below last May's. Reported Alaskan production fell slightly; lower 48 production was about the same as last year. The continued strength of lower 48 output is in stark contrast to the year-to-year decreases throughout most of the seventies. Had these declines continued, production in the lower 48 would have been about 1 million barrels a day below actual current levels.

May's inventory movements may be an indication that, in contrast to their behavior during the past two years, changes in stock levels have returned to a more normal seasonal pattern. Inventories rose about 9 million barrels in May, about in line with the average May increase experienced since the mid-seventies. However, if adjustment is made for the large, though not unusual, drop in Alaskan oil on the water towards month end, the stock build-up is higher. Gasoline inventories represent 34 days of supply, equal to the average "days of supply" level since the mid-seventies. Distillate stocks represent 49 days of supply. This is somewhat below the historical average but considered fully adequate in view of continued high crude inventories and the flexibility resulting from substantial available refinery capacity.

May imports were 2.4% below last year's level. Import levels started to rise noticeably in April and showed a further gain in May from seasonally-adjusted first-quarter levels. This reversal in trend is essentially the combined result of an easing in the year-to-year decline rate of products supplied and the reversion from prior-period drawdowns to a more normal pattern of inventory movements.

In March, the latest month for which data are available, Mexico continued to be the leading U.S. supplier, followed by Canada, Venezuela, and the United Kingdom. Mexico has held the lead position since mid-1982.

The rise in rig activity that started in mid-April continued for most of May, though a downturn was experienced at month end. On average, the number of rigs rose slightly over April levels, dropped close to 40% from year-earlier levels, and is now 55% lower than the January 1982 seasonally-adjusted high. May well data are not yet available. For the first four months, well completions reported were about 9% below the corresonding 1982 period.

(In millions of B/D)	MAY ESTIMATES			YEAR-TO-DATE ESTIMATES		
	1983	1982	% Change	1983	1982	% Change
—Total supply	15.3	15.5	(0.8)	15.1	15.4	(1.9)
—Crude production[2]	8.7	8.7	(0.5)	8.7	8.7	0.2
—Crude oil imports[3] [4]	2.9	3.1	(6.3)	2.5	2.9	(15.5)
—Product imports	1.6	1.5	5.8	1.5	1.6	(6.9)

1/ Total supply, i.e., production plus imports adjusted for net stock change is equal to total products supplied from primary storage. Total products supplied from primary storage less exports is equal to total domestic products supplied. Information contained in this report is derived from information published in the API Weekly Bulletin and is based on historical analysis of the industry. All data reflect the most current information available to the API and include all previously published revisions.

2/ Includes lease condensate.

3/ Beginning with January 1977, the U.S. Department of Energy began reporting crude oil imports as of the date of importation. Previously, this data, with the exception of Canadian crude imports, was reported as of the date it was received at the refinery. This change may affect both the level of crude oil imports and crude oil stocks. API estimates of these data may, therefore, differ slightly from those of the U.S. Department of Energy.

4/ API data do not include crude oil imported for the Strategic Petroleum Reserve (SPR) nor crude oil stocks held in the SPR (according to the U.S. Department of Energy, the SPR held approximately 327 million barrels as of May 31, 1983).

ESTIMATED UNITED STATES PETROLEUM BALANCE

(Daily Average in Thousands of 42 Gallon Barrels)

Supply/Products Supply From Primary Storage	MAY			YEAR-TO-DATE		
	1983[1]	1982[2]	% Change	1983[3R]	1982[2]	% Change
Products Supplied:						
Total motor gasoline	6,607	6,650	(0.6)	6,421	6,435	(0.2)
Finished leaded motor gasoline*	3,031	3,235	(6.3)	2,932	3,134	(6.4)
Finished unleaded motor gasoline*	3,576	3,415	4.7	3,489	3,301	5.7
Naphtha-jet	238	205	16.1	220	202	8.9
Kerosine-jet	792	800	(1.0)	801	811	(1.2)
Distillate fuel oil	2,286	2,434	(6.1)	2,722	2,978	(8.6)
Residual fuel oil	1,288	1,499	(14.1)	1,529	1,888	(19.0)
All other oils[4]	3,329	3,584	(7.1)	3,524	3,649	(3.4)
Reclassified[5]	- 236	- 324	(27.2)	- 218	- 310	(29.7)
Total domestic products supplied	14,304	14,848	(3.7)	14,999	15,653	(4.2)
Exports	740	803	(7.8)	855	821	4.1
Total products supplied	15,044	15,651	(3.9)	15,854	16,474	(3.8)
Supply:						
Domestic production:						
Crude oil[6]	8,671	8,712	(0.5)	8,676	8,655	0.2
Natural gas liquids	1,558	1,520	2.5	1,594	1,550	2.8
Other supply[7]	641	647	(0.9)	872	665	31.1
Total domestic supply	10,870	10,879	(0.1)	11,142	10,870	2.5
Imports:						
Crude oil, total	2,915[10/]	3,110[10/]	(6.3)	2,484[10/]	2,939[10/]	(15.5)
Canadian	222	188	18.1	237	183	29.5
Other	2,693	2,922	(7.8)	2,247	2,756	(18.5)
Products, total	1,556	1,471	5.8	1,465	1,573	(6.9)
Residual fuel oil	602	738	(18.4)	669	830	(19.4)
Other	954	733	30.2	796	743	7.1
Total imports	4,471	4,581	(2.4)	3,949	4,512	(12.5)
Total supply	15,341	15,460	(0.8)	15,091	15,382	(1.9)
Stock change, all oils	+ 297	- 191	XXXX	- 763	-1,092	XXXX
Refinery Operations						
Input to crude oil distillation units	11,998	12,224	(1.8)	11,476	11,867	(3.3)
Operable capacity	16,854	17,971	(6.2)	16,841	18,005	(6.5)
Refinery utilization (%)[8]	71.2%	68.0%	4.7	68.1%	65.9%	3.3
Crude oil runs	11,633	11,801	(1.4)	11,150	11,476	(2.8)

Stocks (millions bbls.)	1983		1982[2]	% Change from ...	
	May 31[9]	Apr. 30[9]	May 31	Previous Month	Year Ago
Crude oil 10/	352.0	358.1	348.5	(1.7)	1.0
Unfinished oils	108.4	114.5	117.9	(5.3)	(8.1)
Total motor gasoline**	225.1	225.6r/	214.9	(0.2)	4.7
Finished leaded motor gasoline*	93.3	91.2r/	88.3	2.3	5.7
Finished unleaded motor gasoline*	93.7	93.0	85.4	0.8	9.7
Naphtha-jet	7.2	6.9	6.6	4.3	9.1
Kerosine-jet	36.2	36.0	35.2	0.6	2.8
Distillate fuel oil	111.8	107.5	114.5	4.0	(2.4)
Residual fuel oil	47.6	44.3	59.1	7.4	(19.5)
All other oils	164.7	150.9r/	191.7	9.1	(14.1)
Total all oils	1,053.0	1,043.8r/	1,088.4	0.9	(3.3)

1/ Based on API estimated data converted to a monthly basis.
2/ Source: U.S. Department of Energy.
3/ Source: January-March, U.S. Department of Energy, April-May, API.
4/ Includes crude losses.
5/ Beginning with January 1981, U.S. Department of Energy began using a new data collection system which encompasses a method to ascertain the amount of product reclassified during the production phase. So that there will be no double counting of these volumes, they are subtracted from total domestic products supplied.
6/ Includes lease condensate.
7/ Includes Unaccounted-for crude oil, Refinery input of other hydrocarbons, and Processing gain.
8/ Represents "Input to crude oil distillation units" as a percent of "Operable capacity."
9/ Derived by interpolating API weekly stocks data.
10/ Data do not include oil imported for the Strategic Petroleum Reserve (SPR) nor crude oil stocks held in the SPR.
R/ Revised.
* Included in motor gasoline.
** Includes finished leaded, finished unleaded, and motor gasoline blending components stocks.

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Monthly Statistical Report

Prepared by the Statistics Department

Vol. 7, No. 6

JULY 14, 1983

JUNE 1983

ESTIMATED U.S. PETROLEUM BALANCE

SUMMARY

Total domestic products supplied fell 4.0% (629 MBD) during the first half of 1983 compared with the corresponding prior-year period. The rate of decline in the second quarter, adjusted seasonally and for weather factors, was smaller than the first quarter's, reflecting the resurgence in economic activity.

Crude oil production continued to exceed last year's levels, both for June and the second quarter, though the margin was slim. Seasonally-adjusted imports in the second quarter were about 29% ahead of first quarter levels and minimally above those of April-to-June 1982. Total June product inventories did not experience the customary seasonal advance, possibly because crude oil inventories are still high and available refinery capacity lends flexibility to supply management. Rig activity moved in a relatively narrow range in June, increasing minimally over prior-month levels. The number of wells drilled continued to fall. For the first five months (latest data published), the number of wells reported fell 9% under last year's level.

PRODUCTS SUPPLIED[1/]

Gasoline was supplied at a 152 MBD (2.2%) higher rate in June than a year ago. During the second quarter as a whole, the level of gasoline deliveries exceeded the deseasonalized trend by almost the same amount as in the first quarter. This comparison, however, is distorted by what appears to have been a strong surge in March deliveries, due mainly to excise tax considerations and non-primary storage replenishments. The March increase reduced April—and second quarter—gasoline supplied levels, shifting demand into first-quarter deliveries. Correcting for this distortion, it appears that second-quarter gasoline demand increased about 250 MBD over the deseasonalized first-quarter level and about 30 MBD over last year.

Gasoline prices advanced roughly 1¢ during June but were still about 18% below their early 1981 highs. The influence on gasoline demand of price changes, demographic factors, and seasonality is discussed beginning on page 6.

Distillates were supplied at a 105 MBD (4.3%) higher rate in June than a year ago. For the quarter as a whole, adjusted seasonally and for weather factors, the decline rate was about half the 7½% decline in the first quarter. The underlying demand for distillates, it appears, is gradually responding to an improving economic picture. Truck and railroad traffic, for example, has been showing steady improvement over the past several months and has begun to approach prior-year levels. This had the effect of reducing the second-quarter decline by about 50 MBD, lowering the decline rate by about two percentage points to 4.1%.

The level of residual fuel oil supplied fell 169 MBD (11.6%) versus last June. On a seasonally-adjusted basis, the second quarter level was slightly greater than the first quarter's, reversing the prior quarterly downward trend that had been unbroken since early 1979. The pick-up in economic activity played a part in preventing any further decline in the rate of residual fuel oil supplied which had fallen by almost half between 1978 and 1982. Residual fuel oil supplied for the first six months, however, was still about 375 MBD below last year's level, though there was evidence of economic recovery in some market segments. Electricity output, for example, has recently been on the rise. Preliminary data indicate that electricity generation in the second quarter was slightly above last year's level, as opposed to a 4% decrease (partly due to warm weather) during the first quarter.

For the first quarter, electric utilities' use of petroleum products (mostly residual fuel oil) fell almost two percentage points to less than 7% of total input, but the share of hydroelectric power and nuclear fuel increased by 2 and 1 percentage points, respectively. Coal's share remained steady at 52%, while natural gas fell more than a point to about 10%.

The second quarter's decline in residual fuel oil used by electric utilities is likely to have been close to the first quarter's 200 MBD rate, despite higher electricity generation. This estimate is based on the fact that hydroelectric and nuclear power sources increased their share of total input over the prior year during the first quarter. These increases are assumed to have continued in the second quarter as they did in April. Preliminary April data indicate a slightly higher nuclear power use despite reported

unavailability of some capacity due to maintenance work. There was also a substantial April increase in power from hydroelectric sources over first quarter levels. Industry sources place coal input this year at levels equal to or possibly slightly ahead of last year.

Lower levels of bunker fuel sales, if continued at the first quarter decline rate of about 60 MBD, may also have contributed to the decrease.

To what extent natural gas may have lost market share to residual fuel in the industrial sector is still not ascertainable to any exact degree. Some natural gas supply contracts apparently have been renegotiated and a mini-spot market for natural gas seems to have developed. Some chemical companies, for example, have been using data-base services to ascertain natural gas prices being paid and arranging for short-term purchases direct from producers. The rise in natural gas prices overall has, over the past few months, not matched recent sharp increases in residual fuel oil prices. In fact, the Producer Price Index lists small declines for April and May at that marketing level. This recent widening of the gap between natural gas prices and residual fuel oil postings may have lessened switchbacks to residual fuel oil.

The level of kerosine jet fuel supplied for the first half of 1983 is about equal to last year's. Miles flown, however, have been rising—up 3% for the first 4 months and likely to have maintained strength since then in view of substantial May and June improvements in revenue passenger miles at major airlines. This indicates continued improvement in fuel efficiency.

(In millions of B/D)	JUNE ESTIMATES			YEAR-TO-DATE ESTIMATES		
	1983	1982	% Change	1983	1982	% Change
—Total domestic products supplied	15.3	14.9	2.6	14.9	15.5	(4.0)
—Motor gasoline supplied	7.0	6.8	2.2	6.5	6.5	(0.1)
—Distillate fuel oil supplied	2.5	2.4	4.3	2.7	2.9	(7.6)
—Residual fuel oil supplied	1.3	1.5	(11.6)	1.4	1.8	(20.6)

SUPPLY[1/]

Total supply fell 99 MBD in June, a 277 MBD decrease in imports being partially offset by a 178 MBD increase in total domestic supply.

Crude oil production during June, and the first six months as a whole, was slightly ahead of corresponding 1982 levels. The continued ability of lower 48 domestic production to offset the natural decline of existing fields with output from new wells is a major departure from the trend in the 1970's. Since decontrol of crude oil in 1981, total lower 48 output has varied only minimally and, seasonally adjusted, is at roughly the same level.

While only minimally higher than 1982's second quarter, imports did register a sharp gain, about 29%, over the first quarter level on a deseasonalized basis. This change in trend is, in the main, the result of seasonally-adjusted product demand showing an increase in the second quarter over the preceding quarter.

Mid-1982 marked the emergence of Mexico as this country's leading oil supplier. At the same time, the deteriorating level of imports from OPEC countries suffered further losses. At this time, OPEC's share of U.S. imports is less than 30%, compared with about 48% in 1982 and 69% in 1978.

Import dependency continued to lessen. For the first six months of 1983, adjusted imports (i.e., gross non-SPR imports less exports of gasoline, distillates and residual fuel oil) represented an estimated 26% of total domestic products supplied. This compares with 28% and 42%, respectively, for corresponding 1982 and 1978 periods. Exports of gasoline, distillates, and residual fuel oil have in recent months been averaging about 300 MBD, a manyfold increase over the corresponding 1978 period.

Inventories continue to be fully adequate though product stocks did not experience the normal seasonal rise in June. The large crude inventory excess—at minimum some 50 million barrels—remains. Combined with the flexibility afforded by ample available refinery capacity, this crude inventory overhang may well have acted to minimize seasonal build-up of major products inventories. However, gasoline stocks fell only about 1 million barrels compared with a normal May-to-June decline of about five million barrels. Current gasoline stocks represent about 32 days of supply, a normal level. Distillate inventories equal 45 days of supply—a substantial (roughly 20%) increase above trend in distillates supplied, resulting in a less-than-normal June distillate stock build-up.

Refinery utilization has been gradually rising over the past several weeks. June's refinery utilization level, at 73.6%, was the same as last year, though operable capacity dropped about 3/4 million barrels. If capacity in actual operation is used as a base, the utilization rate rises to the mid-80's.

Drilling activity showed a mixed picture in the second quarter. The number of active rigs, which had been rising since mid-April, rose only slightly in June but was still about one-third below a year ago. For the first half, the number of active rigs was 43% below the corresponding prior-year level. June data for wells drilled are not yet available. For the first five months, total reported wells were 9% below the corresponding 1982 period. The seismic crew count, which had been dropping steadily since late 1981, stabilized in the first half of 1983 at about 450 crews, some 30% below the comparable 1982 period.

(In millions of B/D)	JUNE ESTIMATES			YEAR-TO-DATE ESTIMATES		
	1983	1982	% Change	1983	1982	% Change
—Total supply	15.9	16.0	(0.6)	15.1	15.5	(2.2)
—Crude production[2]	8.7	8.6	0.6	8.7	8.7	0.4
—Crude oil imports[3] [4]	3.3	3.7	(10.8)	2.7	3.1	(13.0)
—Product imports	1.6	1.4	8.4	1.5	1.6	(3.6)

1/ Total supply, i.e., production plus imports adjusted for net stock change is equal to total products supplied from primary storage. Total products supplied from primary storage less exports is equal to total domestic products supplied. Information contained in this report is derived from information published in the API Weekly Bulletin and is based on historical analysis of the industry. All data reflect the most current information available to the API and include all previously published revisions.

2/ Includes lease condensate.

3/ Beginning with January 1977, the U.S. Department of Energy began reporting crude oil imports as of the date of importation. Previously, this data, with the exception of Canadian crude imports, was reported as of the date it was received at the refinery. This change may affect both the level of crude oil imports and crude oil stocks. API estimates of these data may, therefore, differ slightly from those of the U.S. Department of Energy.

4/ API data do not include crude oil imported for the Strategic Petroleum Reserve (SPR) nor crude oil stocks held in the SPR (according to the U.S. Department of Energy, the SPR held approximately 332 million barrels as of June 30, 1983).

ESTIMATED UNITED STATES PETROLEUM BALANCE

(Daily Average in Thousands of 42 Gallon Barrels)

Supply/Products Supply From Primary Storage	JUNE			YEAR-TO-DATE		
	1983[1]	1982[2]	% Change	1983[3R]	1982[2]	% Change
Products Supplied:						
Total motor gasoline	6,964	6,812	2.2	6,490	6,498	(0.1)
Finished leaded motor gasoline*	3,109	3,248	(4.3)	2,961	3,153	(6.1)
Finished unleaded motor gasoline*	3,855	3,564	8.2	3,529	3,345	5.5
Naphtha-jet	229	230	(0.4)	220	206	6.8
Kerosine-jet	862	758	13.7	810	803	0.9
Distillate fuel oil	2,545	2,440	4.3	2,670	2,889	(7.6)
Residual fuel oil	1,284	1,453	(11.6)	1,441	1,816	(20.6)
All other oils[4]	3,558	3,640	(2.3)	3,448	3,647	(5.5)
Reclassified[5]	- 111	- 395	(71.9)	- 174	- 325	(46.5)
Total domestic products supplied	15,331	14,938	2.6	14,905	15,534	(4.0)
Exports	708	703	0.7	816	802	1.7
Total products supplied	16,039	15,641	2.5	15,721	16,336	(3.8)
Supply:						
Domestic production:						
Crude oil[6]	8,688	8,632	0.6	8,686	8,651	0.4
Natural gas liquids	1,547	1,505	2.8	1,568	1,543	1.6
Other supply[7]	786	706	11.3	720	671	7.3
Total domestic supply	11,021	10,843	1.6	10,974	10,865	1.0
Imports:						
Crude oil, total	3,279[10/]	3,678[10/]	(10.8)	2,665[10/]	3,062[10/]	(13.0)
Canadian	262	201	30.3	246	186	32.3
Other	3,017	3,477	(13.2)	2,419	2,876	(15.9)
Products, total	1,567	1,445	8.4	1,495	1,551	(3.6)
Residual fuel oil	572	643	(11.0)	655	799	(18.0)
Other	995	802	24.1	840	752	11.7
Total imports	4,846	5,123	(5.4)	4,160	4,613	(9.8)
Total supply	15,867	15,966	(0.6)	15,134	15,478	(2.2)
Stock change, all oils	- 172	+ 325	XXXX	- 587	- 858	XXXX
Refinery Operations						
Input to crude oil distillation units	12,409	12,945	(4.1)	11,605	12,046	(3.7)
Operable capacity	16,854	17,587	(4.2)	16,840	17,936	(6.1)
Refinery utilization (%)[8]	73.6%	73.6%	-	68.9%	67.2%	2.5
Crude oil runs	12,022	12,498	(3.8)	11,278	11,645	(3.2)

Stocks (millions bbls.)	1983		1982[2]	% Change from ...	
	June 30[9]	May 31[9]	June 30	Previous Month	Year Ago
Crude oil[10/]	350.8	351.9r/	342.8	(0.3)	2.3
Unfinished oils	108.2	108.4	117.5	(0.2)	(7.9)
Total motor gasoline**	224.1	225.1	219.8	(0.4)	2.0
Finished leaded motor gasoline*	94.6	93.3	90.4	1.4	4.6
Finished unleaded motor gasoline*	88.7	93.7	87.5	(5.3)	1.4
Naphtha-jet	7.5	7.2	6.1	4.2	23.0
Kerosine-jet	35.7	36.2	34.0	(1.4)	5.0
Distillate fuel oil	114.3	111.8	124.6	2.2	(8.3)
Residual fuel oil	47.1	47.6	60.5	(1.1)	(22.1)
All other oils	174.3	178.9r/	192.8	(2.6)	(9.6)
Total all oils	1,062.0	1,067.1r/	1,098.1	(0.5)	(3.3)

1/ Based on API estimated data converted to a monthly basis.
2/ Source: U.S. Department of Energy.
3/ Source: January-April, U.S. Department of Energy, May-June, API.
4/ Includes crude losses.
5/ Beginning with January 1981, U.S. Department of Energy began using a new data collection system which encompasses a method to ascertain the amount of product reclassified during the production phase. So that there will be no double counting of these volumes, they are subtracted from total domestic products supplied.
6/ Includes lease condensate.
7/ Includes Unaccounted-for crude oil, Refinery input of other hydrocarbons, and Processing gain.
8/ Represents "Input to crude oil distillation units" as a percent of "Operable capacity."
9/ Derived by interpolating API weekly stocks data.
10/ Data do not include oil imported for the Strategic Petroleum Reserve (SPR) nor crude oil stocks held in the SPR.
R/ Revised.
* Included in motor gasoline.
** Includes finished leaded, finished unleaded, and motor gasoline blending components stocks.

ESTIMATED UNITED STATES PETROLEUM BALANCE

(Daily Average In Thousands of 42 Gallon Barrels)

Supply/Products Supplied From Primary Storage	2nd QUARTER		
	1983[1]	1982[2]	% Change
Products Supplied:			
Total motor gasoline	6,687	6,783	(1.4)
Finished leaded motor gasoline*	3,044	3,293	(7.6)
Finished unleaded motor gasoline*	3,643	3,490	4.4
Naphtha-jet	227	219	3.7
Kerosine-jet	831	780	6.5
Distillate fuel oil	2,511	2,617	(4.1)
Residual fuel oil	1,312	1,588	(17.4)
All other oils[3]	3,376	3,629	(7.0)
Reclassified[4]	- 149	- 342	(56.4)
Total domestic products supplied	14,795	15,274	(3.1)
Exports	752	764	(1.6)
Total products supplied	15,547	16,038	(3.1)
Supply:			
Domestic production:			
Crude oil[5]	8,682	8,651	0.4
Natural gas liquids	1,536	1,537	(0.1)
Other supply[6]	694	654	6.1
Total domestic supply	10,912	10,842	0.6
Imports:			
Crude oil, total	3,046[9/]	3,137[9/]	(2.9)
Canadian	243	189	28.6
Other	2,803	2,948	(4.9)
Products, total	1,571	1,463	7.4
Residual fuel oil	639	715	(10.6)
Other	932	748	24.6
Total imports	4,617	4,600	0.4
Total supply	15,529	15,442	0.6
Stock change, all oils	- 18	- 596	XXXX
Refinery Operations			
Input to crude oil distillation units	12,018	12,310	(2.4)
Operable capacity	16,847	17,843	(5.6)
Refinery utilization (%)[7]	71.3%	69.0%	3.3
Crude oil runs	11,692	11,894	(1.7)

Stocks (millions bbls.)	2nd QUARTER		
	1983[8]	1982[2]	% Change
Crude oil	350.8[9/]	342.8[9/]	2.3
Unfinished oils	108.2	117.5	(7.9)
Total motor gasoline**	224.1	219.8	2.0
Finished leaded motor gasoline*	94.6	90.4	4.6
Finished unleaded motor gasoline*	88.7	87.5	1.4
Naphtha-jet	7.5	6.1	23.0
Kerosine-jet	35.7	34.0	5.0
Distillate fuel oil	114.3	124.6	(8.3)
Residual fuel oil	47.1	60.5	(22.1)
All other oils	174.3	192.8	(9.6)
Total all oils	1,062.0	1,098.1	(3.3)

1/ Source: U.S. Department of Energy, April; May-June, API.
2/ Source: U.S. Department of Energy.
3/ Includes crude losses.
4/ Beginning with January 1981, U.S. Department of Energy began using a new data collection system which encompasses a method to ascertain the amount of product reclassified during the production phase. So that there will be no double counting of these volumes, they are subtracted from total domestic products supplied.
5/ Includes lease condensate.
6/ Includes Unaccounted-for crude oil, Refinery input of other hydrocarbons, and Processing gain.
7/ Represents "Input to crude oil distillation units" as a percent of "Operable capacity."
8/ Derived by interpolating API weekly stocks data.
9/ Data do not include oil imported for the Strategic Petroleum Reserve (SPR) nor crude oil stocks held in the SPR.
* Included in motor gasoline.
** Includes finished leaded, finished unleaded, and motor gasoline blending components stocks.

How Gasoline Demand Has Changed

Current gasoline demand is little different from that of ten years ago—increasing only 2.5 percent from 1972 to 1982. Yet this small difference in quantity belies the magnitude of changes that have taken place in gasoline markets over the same period.

A decade earlier, gasoline prices had been falling in real terms, and the market upheavals brought about by an Arab oil embargo and a revolution in Iran had not yet occurred. The country's population was about 10 percent smaller, and the economy was producing one-fifth less in goods and services than at present. Over the last 10 years, demographics shifts, changes in seasonal patterns, and significant price movements have all substantially altered motor gasoline markets, as the following analysis will show.

Geographic Factors

Following the trend that has persisted for much of the country's history, the U.S. population center has continued to move west and south. While population in the North Central and Northeast states grew only 1 percent between 1972 and 1982, the South and West grew over 20 percent (see Figure 1). Some northeastern states actually lost population over the period. Such population shifts have an obvious effect on the size of regional gasoline markets, as Figure 1 shows—while the North Central and Northeast states' gasoline sales declined 9 percent, the South and West states' sales actually grew 11 percent over the same decade. This shift in regional demand is one of the market factors making it uneconomical for some marketers to continue to operate in some areas.

However, there are other reasons for the regional shift in gasoline demand as well. This is evident from the fact that, if demand shifts were exactly proportional to population shifts, demand on a per capita basis would have changed equally in all regions. Yet, in fact, per capita gasoline consumption has fallen more in the Northeast and North Central states than in the South and West (see Figure 2). One important reason for this is that greater growth in per capita disposable income has taken place in the South and West than in the northern states (22 percent versus 15 percent, respectively). Since, on average, a 10 percent increase in real disposable income was associated with about a 7 percent effect on gasoline consumption over this period (other things equal), this difference in income growth further skewed gasoline demand towards the South and West. We estimate that the shifts in population and income have increased the differential between these two regions' demand levels by about 750 MBD, with roughly a fourth of this attributable to income.

A countervailing force (although perhaps a small one) has been the shift in population away from metropolitan areas in the northern states, contrasting with a small increase in the South and West. Since, compared with nonmetropolitan areas, metropolitan areas typically provide the amenities of life at more convenient distances and provide more extensive public transportation, metropolitan living is correlated with lower gasoline consumption. Although this effect is important in some smaller regions, it is relatively less important than the income effect in explaining the difference in demand growth between the northern and southwestern states.

Seasonality

Another important change for gasoline in the last decade has been the flattening of the seasonal pattern. Figure 3 shows that the seasonal peak for gasoline supplied (after removing trend and irregular components) was 15 percentage points above the seasonal low in 1972. By 1982, the differential had been reduced to about 9 percentage points. While part of this change is no doubt a continuation of the gradual flattening that has occurred for several decades, real price increases for gasoline may also be responsible. This is tied to the fact that the character of travel varies seasonally, with the more price-elastic uses being relatively more important during the summer months. Thus, consumption in peak periods is more likely to be curtailed than demand in other periods, if higher prices provide the incentive.

The flattening of gasoline seasonal patterns has reduced the need for seasonal inventory buildup. Approximately 20 million barrels less in seasonal inventories was needed in early 1983 than would have been required had 1972 seasonal demand patterns continued into this year. This reduced requirement is in addition to that brought about by the existence of spare refining capacity. Since the late 1970's, as product demand declined, more existing refining capacity became available for meeting seasonal peaks in demand. This capacity is one factor that has allowed greater seasonal variation in refinery gasoline output in recent years, which has in turn resulted in a further reduction in seasonal inventory requirements.

Prices

The most profound effects on the gasoline market have been brought about by the higher real prices that have prevailed after 1972. In 1972 and prior years, gasoline prices had remained steady or declined—1972 prices, in real terms, were 15 percent below those of a decade earlier. As Figure 4 shows, real prices rose 25 percent from 1972 to 1975, gradually eroded for 3 years, then rose again to reach a level in 1981 about 70 percent above that of 1972. The figure shows that the path of gasoline supplied was roughly a mirror image of that of prices over this period.

Although current real prices (which include the 5 cent federal tax increase of April, 1983, as well as state and local increases) are 18 percent below the March 1981 peak, they are still about 50 percent above 1972 levels. The long-term effects of this higher price level, despite price declines over the past two years, are still being felt, as the relatively stable demand level since 1981 in Figure 4

shows. The U.S. population has increased 10 percent since 1972, its economy has grown 25 percent in real terms, and its vehicle population has risen approximately 35 percent, yet the nation as a whole consumes only slightly more gasoline now than in that year. Without the price changes of the last decade, we estimate that gasoline demand would be approximately 25 percent higher than at present.

Short-run price effects include a reduction in miles travelled (through canceled trips, better planning, and use of other transportation modes), fuel-efficiency-improving maintenance and driving habits and, for the 60 percent of households owning more than one vehicle, greater preference in using the most fuel-efficient vehicle. Long-run effects include purchases of more fuel-efficient vehicles and changes in residence to where less driving is necessary. Clearly, these latter effects can take many years to be fully reflected in demand levels. In particular, at vehicle sales levels of recent years, it would take approximately 15 years to replace the existing fleet. Since technological improvements in vehicle efficiency, in response to a combination of the higher gasoline price of recent years and to federally-mandated requirements, may continue for a number of years, the full lag effect is even longer. This long lag helps to explain why, although average new car fuel efficiency nearly doubled from 1972 to 1982, the average for all cars on the road has only improved a little over 15 percent.

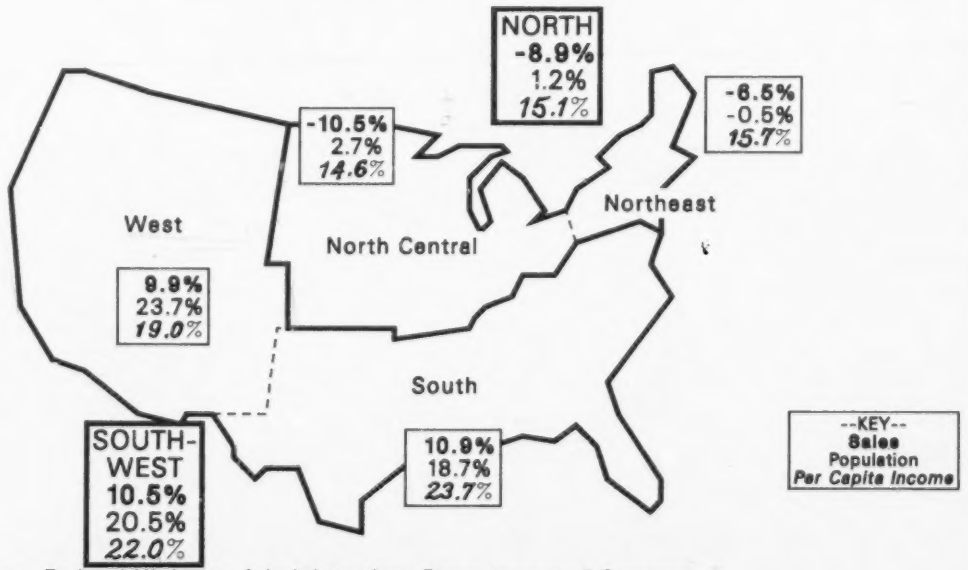
It is this long-run effect that is compensating for the short run effects of lower gasoline prices in the last two years. Otherwise, the 20 percent drop in real gasoline prices from 1981, first half, to 1983, first half, as well as a 3 percent increase in real disposable income over the same period, would have been reflected in a 5 to 10 percent increase in gasoline demand rather than the slight change actually observed.

Nevertheless, consumer preference for smaller cars, which tend to be more fuel-efficient, has lessened over the last two years as gasoline price have declined. As shown in Figure 5, the share of sales of smaller cars, which had shown strong gain in the 1970's, has been reduced from 37 percent in 1981 to 28 percent so far this year. However, part of this shift also reflects the fact that efficiency improvements in all sizes of cars have made vehicle size less of a factor in vehicle purchase decisions. Even if purchasers' tastes are shifting away from smaller cars, the average efficiency of new cars is greater than the vehicles being replaced, and the recent strengthening of vehicle sales is undoubtedly contributing to continued improvement in the average efficiency of the vehicle population.

Conclusion

Over the last ten years, gasoline markets have changed significantly. Geographic shifts in population and income have brought about large changes in regional demand; reduced seasonality of demand, as well as the availability of refining capacity, have reduced the requirements for seasonal inventory buildup; and higher prices have had a continuing effect on demand levels. Of these factors, prices have had the most significant effect. The impact of higher price levels has been large enough, in fact, to offset the combined effects of population and income growth.

FIGURE 1
REGIONAL CHANGES IN GASOLINE SALES,
POPULATION, AND REAL DISPOSABLE INCOME
1972-1982



Sources: Federal Highway Administration, Department of Commerce

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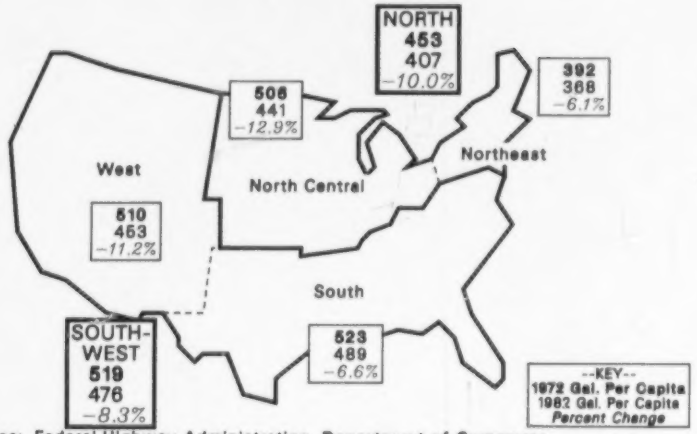
FIGURE 2
REGIONAL CHANGES IN PER CAPITA GASOLINE SALES, 1972-1982



Sources: Federal Highway Administration, Department of Commerce

FIGURE 3
SEASONAL FACTORS FOR MOTOR GASOLINE SUPPLIED

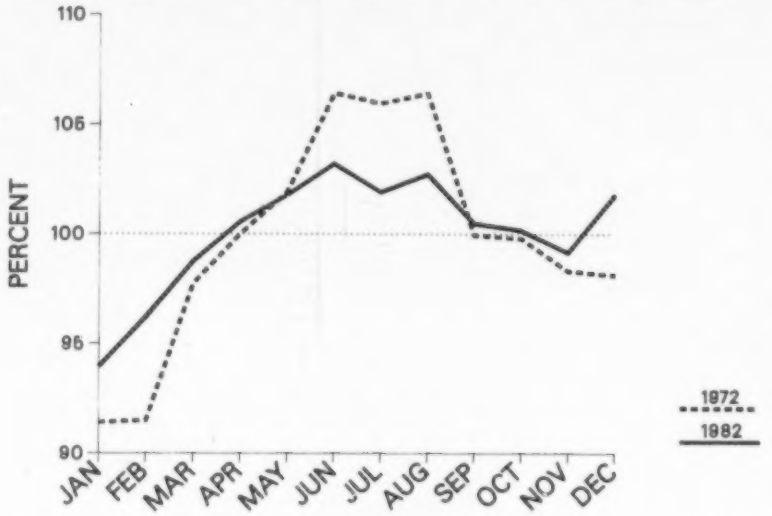
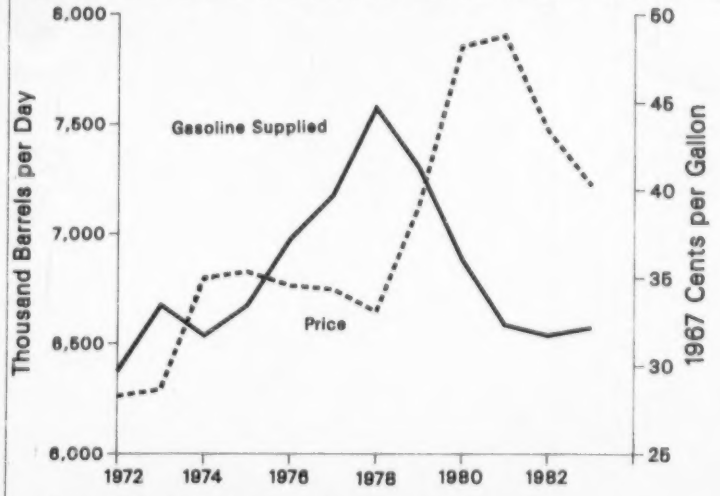
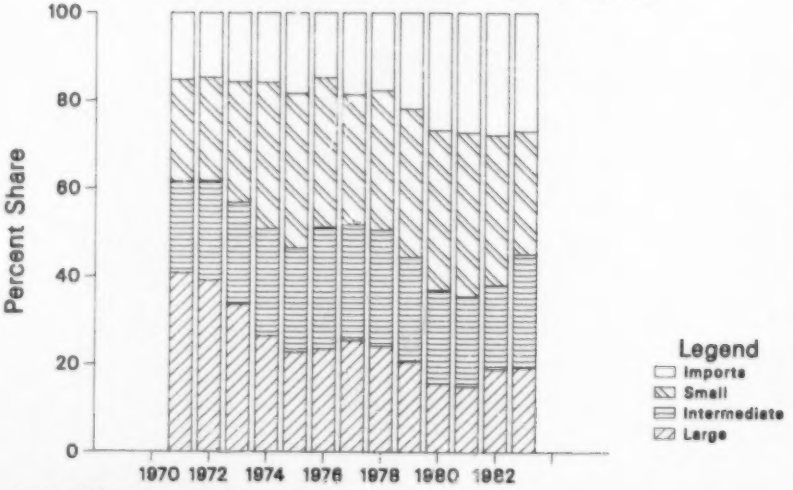


FIGURE 4
MOTOR GASOLINE SUPPLIED AND REAL PRICES



Note: 1983 data are for 6 months, seasonally adjusted.
Sources: Department of Energy, American Petroleum Institute, Oil and Gas Journal, Bureau of Labor Statistics

FIGURE 5
NEW CAR MARKET SHARES BY SIZE



Note: 1983 data are for 5 months.
Source: Automotive News

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Monthly Statistical Report

Prepared by the Statistics Department

Vol. 7, No. 7

AUGUST 17, 1983

JULY 1983

ESTIMATED U.S. PETROLEUM BALANCE

SUMMARY

Total domestic products were supplied in July at about the same level as a year ago, continuing the stable trend of recent months. With product prices steady and mounting evidence of a strengthening economy, light product demand, especially for distillates, continued to exceed last year's level.

Crude oil production again exceeded the prior-year level in July. Imports, though still about 7% below last year, on a seasonally-adjusted basis maintained the upward trend that began early in the year. Total inventories rose 16 million barrels, an increase not quite equal to the average historical seasonal advance. Crude oil inventories have remained at relatively high levels and, while refinery utilization rates have been rising marginally, there remains ample potentially-available refining capacity.

Rig activity increased about 3% in July over June levels. Wells reported drilled fell 21% below year-ago levels but, on a deseasonalized basis, were 6% lower than in June.

PRODUCTS SUPPLIED[1/]

Gasoline was supplied at an 86 MBD (1.3%) higher rate than a year ago, and, for the year to date, is almost exactly even with last year's level. Growing real disposable personal income and continued stability of gasoline prices have helped to support improving gasoline demand, offsetting the long-term effect of substantial price rises in the early 1979-1980 period. Though weakening towards month end, pump prices rose about 1¢ for July as a whole, but, on an inflation-adjusted basis, are still more than 17% below their March 1981 highs.

Unleaded gasoline represented 55.6% of the total gasoline market in July, about 3 percentage points ahead of last year's level. This year-to-year advance is still only about half the average increase of prior years.

The resurgence of the economy is reflected in the strong increase in the level of distillates supplied, up 240 MBD (11.7%) over last July, continuing the strong performance of the past several months. Truck and rail traffic figures, for example, down early in the year, have been improving steadily. In July, rail traffic levels rose some 9% above last year's and truck traffic showed a roughly 5% improvement, accounting for an almost 100 MBD increase in the July distillates supplied level.

The level of residual fuel oil supplied fell 289 MBD (19.3%) from the year-ago level. The shortfall can be traced in the main to lower deliveries of residual fuel oil to electric utilities and decreasing bunker fuel sales, declines of some 200 MBD and 50 MBD, respectively. On a seasonally-adjusted basis, July's level represented a break in the generally-upward demand trend of the past several months. This reversal is surprising and puzzling, although it may reflect the recent upward movement in residual prices.

While electricity production appears to be rebounding, use of residual fuel oil for electricity generation continues to fall. Hydroelectric power and nuclear fuel increased their share of input by roughly 1-1/2 and 3/4 percentage points, respectively, during the first five months of the year versus the corresponding 1982 period, while petroleum (mostly residual fuel oil) dropped more than a percentage point to around 6%. Coal's share stayed about the same; natural gas fell about 1-1/2 percentage points.

There is some evidence of a return to natural gas use by some industrial consumers. In 1982, accompanying a narrowing gap between natural gas and residual fuel oil prices, industrial natural gas consumption weakened at a considerably greater rate than residual fuel oil; in early 1983, it fell at a much lesser rate than residual fuel oil. During the past several months in particular, residual fuel oil prices have been rising while natural gas prices have stayed relatively stable. In fact, gas prices actually fell at the market level covered by the Producer Price Index in the second quarter from March levels; this may have further improved natural gas' short-term competitive position. Additionally, natural gas distributors continue to explore mechanisms to enhance natural gas sales through renegotiation of long-term contractual arrangements.

Miles flown rose about 4% during the first five months over last year's level, while kerosene jet fuel deliveries fell about 1%. Jet fuel deliveries during June and July are estimated to have shown strong growth, moving year-to-date deliveries upward to a better-than-two percent gain over last year. However, revenue passenger miles were roughly 7% ahead for the first six months and air traffic was reportedly also higher than last year during July. With revenue passenger miles maintaining year-to-year gains and load factors experiencing only minor changes, it appears that fuel efficiency improvements continue to be realized.

(In millions of B/D)	JULY ESTIMATES			YEAR-TO-DATE ESTIMATES		
	1983	1982	% Change	1983	1982	% Change
—Total domestic products supplied	14.8	14.8	—	14.9	15.5	(3.8)
—Motor gasoline supplied	6.9	6.8	1.3	6.5	6.5	(0.1)
—Distillate fuel oil supplied	2.3	2.0	11.7	2.6	2.8	(5.1)
—Residual fuel oil supplied	1.2	1.5	(19.3)	1.4	1.8	(21.4)

SUPPLY[1/]

Total supply showed a 411 MBD decrease compared with last July, entirely the result of a decrease in imports.

Crude oil production continued to maintain its slight edge over prior-year levels. The increase, in the main, is the result of somewhat higher production levels in the lower 48. The ability of producers to maintain essentially the same output since shortly after decontrol contrasts sharply with predecontrol experience of a 300 MBD annual decrease in production.

Imports, though still 7% below July 1982 levels, have been rising for the past several months, propelled by rising domestic demand. The attached exhibit depicts the relationship between product demand and import levels. This relationship is, of course, especially strong when domestic crude production levels are stable and inventory changes are minimal. This combination of circumstances has prevailed during the past several months. Inventories have stabilized after falling steadily from above-normal levels since mid-1981, and crude production has moved little in either direction for about two years. The gradual improvement in domestic product demand, as a consequence, is being filled by rising imports.

Mexico continues to be the leading U.S. supplier, followed by Canada, the United Kingdom, Venezuela, and Nigeria. A review of import data for the first five months (latest available data) shows that, as imports began to rise, most of the increased imports were obtained from these suppliers.

Exports, while still strong and higher than last year, are below early 1983 levels, reflecting the continued weakness in European petroleum markets.

The latest tally of the merchandise trade balance shows imports rising and exports falling this year. The gap between U.S. merchandise exports and imports (Census basis) widened by about $11 billion in the first half of 1983 versus first half 1982. There is a decided difference in petroleum imports' impact on the trade deficit between the first and second quarters. In the first quarter, the total trade deficit grew by about 1-1/2 billion dollars over the prior year and would have grown even more if net petroleum imports had not fallen by close to 5 billion dollars. In the second quarter, the overall deficit grew by 9 billion dollars, while net petroleum imports stayed approximately the same as last year.

As part of the overall 16 million barrel July rise in inventories, a slightly-less-than seasonal rate of increase, gasoline and distillate stocks rose 3 million and 14 million barrels, respectively. Gasoline stocks represent 33 days of supply, in line with the average since the mid-seventies. Distillate inventories represent 56 days of supply, considered adequate in view of continuing high crude stocks and potentially-available refining capacity. The slower-than-average buildup in total inventories reflects a slower distillate buildup as a result of both decreased seasonal variation in distillate consumption and increased production capacity relative to peak heating season demand.

API's recently-released refinery capacity survey showed a reduction of more than half a million barrels in operable capacity. That adjustment resulted in a roughly three-percentage-point increase in refinery utilization, most of the utilization increase experienced in July over the previous month. It also indicated that about 1.6 million barrels of capacity, included in the operable total but not currently in operation, is available for reactivation.

The number of active rigs rose 3% in July from the prior month level and, though 26% below last July, is 11% ahead of April's recent-years low on a seasonally-adjusted basis. Wells reported drilled continued to fall and were 21% below a year ago in July. For the year to date, the reported number of wells drilled trail 1982 by 12%.

(In millions of B/D)	JULY ESTIMATES			YEAR-TO-DATE ESTIMATES		
	1983	1982	% Change	1983	1982	% Change
—Total supply	16.1	16.5	(2.5)	15.3	15.7	(2.4)
—Crude production[2]	8.7	8.7	0.4	8.7	8.6	0.6
—Crude oil imports[3,4]	3.7	4.2	(10.9)	2.8	3.2	(13.1)
—Product imports	1.7	1.6	1.8	1.5	1.6	(4.1)

1/ Total supply, i.e., production plus imports adjusted for net stock change is equal to total products supplied from primary storage. Total products supplied from primary storage less exports is equal to total domestic products supplied. Information contained in this report is derived from information published in the API Weekly Bulletin and is based on historical analysis of the industry. All data reflect the most current information available to the API and include all previously published revisions.

2/ Includes lease condensate.

3/ Beginning with January 1977, the U.S. Department of Energy began reporting crude oil imports as of the date of importation. Previously, this data, with the exception of Canadian crude imports, was reported as of the date it was received at the refinery. This change may affect both the level of crude oil imports and crude oil stocks. API estimates of these data may, therefore, differ slightly from those of the U.S. Department of Energy.

4/ API data do not include crude oil imported for the Strategic Petroleum Reserve (SPR) nor crude oil stocks held in the SPR (according to the U.S. Department of Energy, the SPR held approximately 340.7 million barrels as of July 31, 1983).

ESTIMATED UNITED STATES PETROLEUM BALANCE

(Daily Average in Thousands of 42 Gallon Barrels)

Supply/Products Supply From Primary Storage	JULY			YEAR-TO-DATE		
	1983[1]	1982[2]	% Change	1983[3R]	1982[2]	% Change
Products Supplied:						
Total motor gasoline	6,876	6,790	1.3	6,538	6,545	(0.1)
Finished leaded motor gasoline*	3,053	3,222	(5.2)	2,969	3,161	(6.1)
Finished unleaded motor gasoline*	3,823	3,568	7.2	3,569	3,384	5.5
Naphtha-jet	235	221	6.3	219	210	4.3
Kerosine-jet	863	781	10.5	818	799	2.4
Distillate fuel oil	2,286	2,046	11.7	2,622	2,763	(5.1)
Residual fuel oil	1,212	1,501	(19.3)	1,410	1,795	(21.4)
All other oils[4]	3,460	3,856	(10.3)	3,427	3,651	(6.1)
Reclassified[5]	- 114	- 371	(69.3)	- 148	- 282	(47.5)
Total domestic products supplied	14,818	14,824	-	14,886	15,481	(3.8)
Exports	806	741	8.8	830	793	4.7
Total products supplied	15,624	15,565	0.4	15,716	16,274	(3.4)
Supply:						
Domestic production:						
Crude oil[6]	8,695	8,658	0.4	8,692	8,636	0.6
Natural gas liquids	1,510	1,513	(0.2)	1,548	1,542	0.4
Other supply[7]	556	578	(3.8)	708	647	9.4
Total domestic supply	10,761	10,749	0.1	10,948	10,825	1.1
Imports:						
Crude oil, total 10/	3,697	4,150	(10.9)	2,821	3,248	(13.1)
Canadian	281	249	12.9	252	196	28.6
Other	3,416	3,901	(12.4)	2,569	3,052	(15.8)
Products, total	1,672	1,642	1.8	1,536	1,602	(4.1)
Residual fuel oil	679	657	3.3	574	789	(14.6)
Other	993	985	0.8	862	813	6.0
Total imports	5,369	5,792	(7.3)	4,357	4,850	(10.2)
Total supply	16,130	16,541	(2.5)	15,305	15,675	(2.4)
Stock change, all oils	+ 506	+ 976	XXXX	- 411	- 599	XXXX
Refinery Operations						
Input to crude oil distillation units	12,591	12,890	(2.3)	11,761	12,160	(3.3)
Operable capacity	16,294	17,203	(5.3)	16,757	17,648	(5.0)
Refinery utilization (%)[8]	77.3%	74.9%	3.2	70.2%	68.9%	1.9
Crude oil runs	12,270	12,446	(1.4)	11,448	11,755	(2.6)

Stocks (millions bbls.)	1983		1982[2]	% Change from ...	
	July 31[9]	June 30[9]	July 31	Previous Month	Year Ago
Crude oil 10/	346.2	350.8	345.7	(1.3)	0.1
Unfinished oils	107.2	108.2	117.8	(0.9)	(9.0)
Total motor gasoline**	225.7	222.8r/	225.9	1.3	(0.1)
Finished leaded motor gasoline*	96.9	94.6	92.9	2.4	4.3
Finished unleaded motor gasoline*	90.1	88.7	89.7	1.6	0.4
Naphtha-jet	7.1	7.5	6.4	(5.3)	10.9
Kerosine-jet	33.9	35.7	33.4	(5.0)	1.5
Distillate fuel oil	128.7	114.3	148.2	12.6	(13.2)
Residual fuel oil	48.1	47.1	58.9	2.1	(18.3)
All other oils	184.1	178.9r/	190.0	2.9	(3.1)
Total all oils	1,081.0	1,065.3r/	1,126.3	1.5	(4.0)

1/ Based on API estimated data converted to a monthly basis.
2/ Source: U.S. Department of Energy.
3/ Source: January-May, U.S. Department of Energy, June-July, API.
4/ Includes crude losses.
5/ Beginning with January 1981, U.S. Department of Energy began using a new data collection system which encompasses a method to ascertain the amount of product reclassified during the production phase. So that there will be no double counting of these volumes, they are subtracted from total domestic products supplied.
6/ Includes lease condensate.
7/ Includes Unaccounted-for crude oil, Refinery input of other hydrocarbons, and Processing gain.
8/ Represents "Input to crude oil distillation units" as a percent of "Operable capacity."
9/ Derived by interpolating API weekly stocks data.
10/ Data do not include oil imported for the Strategic Petroleum Reserve (SPR) nor crude oil stocks held in the SPR.
R/ Revised.
* Included in motor gasoline.
** Includes finished leaded, finished unleaded, and motor gasoline blending components stocks.

SEASONALLY ADJUSTED PRODUCT SUPPLIED AND IMPORTS

Sources: Department of Energy, American Petroleum Institute

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American Petroleum Institute
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Washington, D.C. 20037

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AUGUST 1983

ESTIMATED U.S. PETROLEUM BALANCE

SUMMARY

The improved tone of domestic product supplied levels continued in August. With ongoing confirmation from relevant indicators that the economic upturn was continuing, both gasoline and distillate demand showed substantial increases over year-ago levels. Residual fuel oil deliveries, seasonally adjusted, have stayed at about the same level since spring.

Crude oil production dipped slightly below recently-prevailing levels, presumably reflecting hurricane-related curtailment of operations, but still minimally exceeded last year's level as a result of higher production in the lower 48. Improving demand and a fairly normal inventory build prompted significantly higher import levels. Inventories rose 19 million barrels, about in line with seasonal expectations. More than two-thirds of the roughly-seasonal change in inventories resulted from the build-up of distillate stocks.

Rig activity in August, seasonally adjusted, was 16% above the April low, while wells reported drilled continued to fall. The longer-range seismic crew indicator has shown no meaningful change over the past few months, when adjusted for seasonal variations.

PRODUCTS SUPPLIED[1/]

Gasoline was supplied at a 343 MBD (5.2%) greater rate than last year, shifting year-to-date results into the plus column. Weakening of the long-range impact of the 1979-1980 price increases, lower real prices, a limited return to larger cars, and higher real disposable personal income have led to gradually-improved gasoline demand. While only marginally higher for the first eight months compared with the year-ago period, deseasonalized demand has improved some 4% during the past six months over the preceding six months' average.

Pump prices have fallen uninterruptedly since mid-July and, despite tax increase of about 6¢ since March (5¢ federal and about 1¢ in state and local), are still 25¢ (about 18%) below early 1981 peaks, after adjusting for inflation.

Unleaded gasoline's 55.8% August market share is about two-and-a-half percentage points above last year. As in previous months this year, this advance is still markedly below historical levels. Lagging turnover of the car fleet has undoubtedly contributed to the slowdown in the conversion to unleaded gasoline.

Distillate fuel was supplied at a 167 MBD (7.6%) higher rate than last August. Recovering diesel demand, arising mainly from higher rail and truck traffic, appears to be one of the major factors in higher distillate consumption. The 7% and 8% increases in truck and rail traffic over last year, respectively, are estimated to be responsible for about half of the August year-to-year increase. With transportation fuels currently constituting a much larger share of total distillates than in the past, changes in the economy are causing greater short-term fluctuation in distillate demand than in the past.

Deseasonalized demand for residual fuel, though still 176 MBD (11.9%) below last August, has been relatively stable since early spring. This is in stark contrast to the almost uninterrupted declines of the past several years. The year-to-year decline in bunker fuel sales, about 60-70 MBD early this year, has been reduced to roughly 30 MBD, partly the result of some improvement in shipping activity worldwide. Losses at electric utilities, which continued into early 1983, abated in the spring, while accelerating economic activity helped to increase overall energy requirements in the industrial sector. However, the recent significant increases in residual fuel oil prices and widening of the natural gas/residual fuel oil price gap are likely to have resulted in a continued loss of residual fuel oil volume to natural gas and other fuels.

Kerosine jet fuel was supplied at a 1.0% greater rate than last year during the first six months of the year, while miles flown rose about 4.5%, indicating continued improvement in fuel efficiency. Jet fuel deliveries also increased in July and August, but reports indicate that air traffic also stayed above year-ago levels in both months.

(In millions of B/D)	AUGUST ESTIMATES			YEAR-TO-DATE ESTIMATES		
	1983	1982	% Change	1983	1982	% Change
—Total domestic products supplied	15.2	14.8	2.7	14.9	15.4	(3.1)
—Motor gasoline supplied	7.0	6.6	5.2	6.6	6.6	0.7
—Distillate fuel oil supplied	2.4	2.2	7.6	2.6	2.7	(3.8)
—Residual fuel oil supplied	1.3	1.5	(11.9)	1.4	1.8	(20.2)

SUPPLY[1/]

Total supply showed a 775 MBD increase over last August levels, a 163 MBD decrease in total domestic supply offsetting a 938 MBD increase in imports.

Crude oil production during 1983 to date has averaged roughly 50 MBD above last year, though August's production level was adversely affected by hurricane Alicia. The increase in production compared with last year is occurring primarily in the lower 48 states. Had the downdrift of the seventies continued, crude production would now be some 1.1 million barrels per day lower than actual current levels.

Imports surged to the highest level in more than two years, topping last August levels by over 900 thousand barrels per day, almost 20%. The increase in petroleum product demand in recent months is being satisfied by higher imports, as domestic production has remained relatively stable. In addition, inventories, having declined almost continually since 1980, are now climbing at relatively normal seasonal rates. This shift accounts for about one-third of the August increase in imports.

Product imports have been especially strong, at 1,995 MBD rising to the highest level since early 1980. Products have been gradually regaining a greater share of total imports after declining steadily in share during the seventies, mainly because of the effect of price controls. Currently, product imports represent roughly one-third of total imports. In the 1978-1980 period, products averaged about 24% of total imports.

Mexico continues to be by far the leading U.S. supplier of crude imports, followed by the United Kingdom, Indonesia, and Canada (6 months data). Canada and Venezuela were the top suppliers of products, with lesser amounts supplied by the Virgin Islands and the Netherlands Antilles. Except for imports from Canada, residual fuel oil was the major product imported from these sources.

Imports have been steadily shifting to non-OPEC sources over the past several years. Of total imports, OPEC sources supplied about 32% in the first six months of this year, down from 69% for the comparable period in 1978. For the same six-month period, adjusted imports (i.e., gross imports less exports of crude oil, gasoline, distillate and residual fuel) amounted to about 26% of total domestic products supplied. During the past two months, however, imports rose substantially, raising the estimated year-to-date dependency level to about 28%. However, this import dependency is well below the 1978 level of about 42%.

The largest part of the 19 million barrel, roughly-seasonal advance in inventories consisted of a 13 million barrel increase in distillate stocks. Gasoline stayed at about the same level as last month and, at 32 days of supply, is in line with the historical average.

Distillate stocks are considered fully adequate for this point in the seasonal cycle. In general, as more fully explained in an article on page 4, the requirements for distillate stock build-up have changed drastically in the last few years as a result of reduced demand and seasonality, higher refinery flexibility, and ready crude and product availability on world markets.

Hurricane Alicia halted or reduced operations for a number of days at some refineries in the Texas Gulf Coast District, reducing the monthly refinery utilization rate by more than 1%. However, even adjusted for the recent change in operable capacity, utilization still exceeds last year's rate. Additionally, the 290 MBD year-to-year increase in input to distillation units, despite the storm-related reduction, roughly parallels the rise in domestic products supplied.

When seasonally adjusted, the number of rigs active in August rose about 4% from the prior month but, though 16% above its recent April low, is still 18% lower than a year ago. Wells reported drilled fell 18% in August compared with year-earlier levels. For the year to date, reported gas completions have fallen 18% from last year's first eight months compared to 11% for oil. Seismic activity has changed little over the past several months. While the number of crews active has been increasing steadily since April's seasonally-adjusted current-year low, most of the increase can be ascribed to seasonal factors.

(In millions of B/D)	AUGUST ESTIMATES			YEAR-TO-DATE ESTIMATES		
	1983	1982	% Change	1983	1982	% Change
—Total supply	16.8	16.0	4.9	15.5	15.7	(1.1)
—Crude production[2/]	8.6	8.6	0.2	8.7	8.6	0.6
—Crude oil imports[3/4/]	4.0	3.6	9.2	3.0	3.3	(9.9)
—Product imports	2.0	1.4	43.3	1.6	1.6	2.6

1/ Total supply, i.e., production plus imports adjusted for net stock change is equal to total products supplied from primary storage. Total products supplied from primary storage less exports is equal to total domestic products supplied. Information contained in this report is derived from information published in the API Weekly Bulletin and is based on historical analysis of the industry. All data reflect the most current information available to the API and include all previously published revisions.

2/ Includes lease condensate.

3/ Beginning with January 1977, the U.S. Department of Energy began reporting crude oil imports as of the date of importation. Previously, this data, with the exception of Canadian crude imports, was reported as of the date it was received at the refinery. This change may affect both the level of crude oil imports and crude oil stocks. API estimates of these data may, therefore, differ slightly from those of the U.S. Department of Energy.

4/ API data do not include crude oil imported for the Strategic Petroleum Reserve (SPR) nor crude oil stocks held in the SPR (according to the U.S. Department of Energy, the SPR held approximately 351.8 million barrels as of August 31, 1983).

ESTIMATED UNITED STATES PETROLEUM BALANCE

(Daily Average in Thousands of 42 Gallon Barrels)

Supply/Products Supply From Primary Storage	AUGUST			YEAR-TO-DATE		
	1983[1]	1982[2]	% Change	1983[3R]	1982[2]	% Change
Products Supplied:						
Total motor gasoline	6,957	6,614	5.2	6,597	6,554	0.7
Finished leaded motor gasoline*	3,076	3,088	(0.4)	2,995	3,152	(5.0)
Finished unleaded motor gasoline*	3,881	3,526	10.1	3,602	3,402	5.9
Naphtha-jet	205	225	(8.9)	215	212	1.4
Kerosine-jet	862	757	13.9	823	794	3.7
Distillate fuel oil	2,375	2,208	7.6	2,590	2,693	(3.8)
Residual fuel oil	1,307	1,483	(11.9)	1,401	1,755	(20.2)
All other oils[4]	3,640	3,696	(1.5)	3,443	3,656	(5.8)
Reclassified[5]	- 106	- 142	(25.4)	- 141	- 264	(46.6)
Total domestic products supplied	15,240	14,841	2.7	14,928	15,400	(3.1)
Exports	893	858	4.1	846	801	5.6
Total products supplied	16,133	15,699	2.8	15,774	16,201	(2.6)
Supply:						
Domestic production:						
Crude oil[6]	8,649	8,634	0.2	8,685	8,636	0.6
Natural gas liquids	1,511	1,524	(0.9)	1,539	1,540	(0.1)
Other supply[7]	617	782	(21.1)	729	664	9.8
Total domestic supply	10,777	10,940	(1.5)	10,953	10,840	1.0
Imports:						
Crude oil, total	3,978[10/]	3,643[10/]	9.2	2,972[10/]	3,298[10/]	(9.9)
Canadian	299	243	23.0	261	202	29.2
Other	3,679	3,400	8.2	2,711	3,096	(12.4)
Products, total	1,995	1,392	43.3	1,616	1,575	2.6
Residual fuel oil	746	550	35.6	696	759	(8.3)
Other	1,249	842	48.3	920	816	12.7
Total imports	5,973	5,035	18.6	4,588	4,873	(5.8)
Total supply	16,750	15,975	4.9	15,541	15,713	(1.1)
Stock change, all oils	+ 617	+ 276	XXXX	- 233	- 488	XXXX
Refinery Operations						
Input to crude oil distillation units	12,485	12,192	2.4	11,877	12,164	(2.4)
Operable capacity	16,294	17,171	(5.1)	16,694	17,587	(5.1)
Refinery utilization (%)[8]	76.6%	71.0%	7.9	71.1%	69.2%	2.7
Crude oil runs	12,207	11,871	2.8	11,578	11,770	(1.6)

Stocks (millions bbls.)	1983		1982[2]	% Change from ...	
	Aug. 31[9]	July 31[9]	Aug. 31	Previous Month	Year Ago
Crude oil [10/]	350.1	346.2	352.9	1.1	(0.8)
Unfinished oils	112.3	107.2	116.8	4.8	(3.9)
Total motor gasoline**	223.9	225.8r/	226.9	(0.8)	(1.3)
Finished leaded motor gasoline*	96.0	97.0r/	93.2	(1.0)	3.0
Finished unleaded motor gasoline*	87.3	90.1r/	92.0	(3.1)	(5.1)
Naphtha-jet	6.9	7.1	6.0	(2.8)	15.0
Kerosine-jet	32.7	33.9	34.7	(3.5)	(5.8)
Distillate fuel oil	142.0	128.9r/	158.7	10.2	(10.5)
Residual fuel oil	45.6	48.1	52.6	(5.2)	(13.3)
All other oils	198.3	195.4r/	186.3	1.5	6.4
Total all oils	1,111.8	1,092.6r/	1,134.9	1.8	(2.0)

1/ Based on API estimated data converted to a monthly basis.
2/ Source: U.S. Department of Energy.
3/ Source: January-June, U.S. Department of Energy, July-August, API.
4/ Includes crude losses.
5/ Beginning with January 1981, U.S. Department of Energy began using a new data collection system which encompasses a method to ascertain the amount of product reclassified during the production phase. So that there will be no double counting of these volumes, they are subtracted from total domestic products supplied.
6/ Includes lease condensate.
7/ Includes Unaccounted-for crude oil, Refinery input of other hydrocarbons, and Processing gain.
8/ Represents "Input to crude oil distillation units" as a percent of "Operable capacity."
9/ Derived by interpolating API weekly stocks data.
10/ Data do not include oil imported for the Strategic Petroleum Reserve (SPR) nor crude oil stocks held in the SPR.
R/ Revised.
* Included in motor gasoline.
** Includes finished leaded, finished unleaded, and motor gasoline blending components stocks.

CHANGES IN THE ECONOMICS AND STRUCTURE OF DISTILLATE SUPPLY

SUMMARY

After inventories had reached the lowest levels in many years, the annual build-up of distillate fuel inventories proceeded at a slower rate in the second and third quarters of this year than has historically been the case. Stock levels are still well below the previous year's levels, levels which were also low by historical standards. Yet, barring unforeseen supply interruptions, this paper concludes that the volume of distillate available from all sources is more than adequate to meet demand during the 1983/1984 heating season.

Changes in the structure and levels of distillate demand, combined with changes in the economics of distillate supply, have reduced the role of distillate inventories and imports in supplying peak season demand levels.

Filling peak season distillate demand has always involved a trade-off between the costs of building and holding seasonal inventories (holding costs) and the cost of supplying demand from current production (production costs). High interest rates in recent years have greatly increased the cost of holding inventories, while the increase in distillate production capacity relative to peak season demand has significantly increased the amount of current consumption that can be supplied from current production. Thus, to minimize costs, refiners have reduced seasonal inventories in favor of satisfying a larger percentage of demand with current production.

DISTILLATE DEMAND

Total domestic distillate demand for the first six months of this year was 7.6 percent below year-ago levels, while 1982 demand was at the lowest levels since 1971 (see Table I). Distillate demand during the 1982-1983 heating season (October through March) was 2,734 mb/d, or 335 mb/d less than in the 1981-1982 heating season. We estimate that about 100 mb/d of the decrease was due to the abnormally warm weather early in the winter. Most of the remainder is attributable to the effects of the recession and the continuing impact of past price increases.

Though peak season distillate demand is now much lower than in the early 1970's, adverse weather can still have a significant impact on demand levels. We estimate that the coldest winter in 100 years, about 14 percent colder than normal, would add about 150 mb/d to distillate demand levels for the winter. Conversely, warm weather can reduce demand levels by similar amounts.

There are several forecasts of distillate demand for the remainder of 1983 and into 1984 available, the following forecasts present a range of possible distillate demand levels.

The Department of Energy is forecasting increases in distillate demand for the remainder of the year as the economy continues to improve. Distillate demand for the 1983/1984 heating season is forecast to be 3.27 mmb/d, nearly 550 mb/d more than the 1982/1983 season's actual. However, the August 1982 DOE forecast for distillate demand for the 1982/1983 heating season was nearly 500 mb/d higher than actual demand, even after adjusting for the mild winter. Nevertheless, if the 1983 forecast is correct, distillate demand this winter will still be 12.5% (almost 500 mb/d) less than the average of the mid-1970's.

The Independent Petroleum Association of America's forecast for distillate demand in the fourth quarter is much lower than the DOE forecast for the same period. The IPAA projects domestic distillate demand to be about 2.83 mmb/d during the fourth quarter, about 360 mb/d lower than the DOE forecast for the same period. The IPAA has not yet made a projection for demand in the first quarter of 1984.

SEASONALITY OF DISTILLATE DEMAND

The demand for distillate fuel is subject to a greater degree of seasonal variation than any other major petroleum product. But, as with other petroleum products, changes in demand structure and price induced conservation have reduced the seasonal variation in distillate demand.

In the early sixties, peak season distillate demand was nearly three times the level (after removing trend and irregular components) of the seasonal low. By the winter of 1983 the differential between high and low had been reduced to less than 50 percentage points (see Exhibit I).

The reduction in the seasonality of distillate demand is easily traced to the decline in the relative share of heating oil and the increase in the use of diesel fuel. In fact, on-highway diesel fuel is the only component of distillate demand which has shown an increase from 1979 levels, although 1982 demand was slightly lower than in 1981 (see Table I).

Historically, distillate fuel consumption during the peak heating season has exceeded refinery capacity to meet those peak demand levels from current production. Though operable refining capacity has declined, distillate demand levels, particularly peak demand levels, have declined even more. This means that refining capacity is now able to supply a much higher percentage of peak season demand with current production.

Domestic distillate demand during the 1982/1983 heating season was at the lowest level since the 1966/1967 heating season. But in the 1966/1967 period, current production supplied less than 80 percent of demand, despite a refinery utilization rate of over 91 percent of capacity. In the 1982/1983 period, current production met 90 percent of demand, despite refinery utilization rates of less than 71 percent.

It is possible to estimate presently available distillate production capacity from existing data. Currently, operable refinery capacity is 16.3 million b/d, while operating capacity, which is operable minus shutdown capacity, is about 14.7 million b/d. Current utilization rates are 78% of operable capacity, or 87 percent of actually operating capacity. Production rates of 3.0 million b/d are easily attainable if utilization rates for operating refineries and distillate yields were at winter levels of around 90%

TABLE I

Distillate Demand by Source

	Total (mmbbl.)	Heating %	On-highway Diesel %	Industrial and Utilities %	Other %
1960	683.3	64	5	7	24
1965	786.9	61	9	7	23
1970	927.3	56	16	9	19
1975	1043.7	47	21	14	18
1978	1257.1	42	23	15	20
1979*	1214.4	36	31	12	21
1980*	1086.7	36	31	12	21
1981*	1032.5	33	33	12	21
1982*	974.9	33	35	12	20

Source: Department of Energy and Bureau of Mines "Sales of Fuel Oil and Kerosene" and "Deliveries of Fuel Oil and Kerosene."

* For years after 1978, data for heating oil sales no longer given separately. Figures for heating represent the sum of residential, commercial, and farm use. These may exclude use of heating fuel in other categories.

and 23%, respectively—levels typically experienced during the 1970's.

Some of the currently idle capacity may not be immediately available for distillate production, and while distillate yields in excess of 23 percent are possible, they are unusual. However, given the current availability of crude oil and idle refining capacity, "surge capacity" of up to 790 mb/d is available, yielding distillate production of 3.8 mmb/d. This would require a refinery utilization rate of 93% with a distillate yield of 25%—rates which were reached several times during the 1970's. A more conservative estimate would be production of 3.3 mmb/d, if no idle capacity is used, utilization rates of operating refineries are 90%, and distillate yield increases to 25%.

In other words, all but about 200 mb/d of projected winter distillate demand could be satisfied with easily attainable production levels, while "surge capacity" is conceivably available to meet any unexpected increases in demand, such as might be caused by an extremely cold winter.

THE ROLE OF DISTILLATE FUEL STOCKS AND IMPORTS

Total distillate stock levels actually represent product held for several distinct reasons. A certain level of stocks is necessary to insure uninterrupted operation of the production and supply system; these stocks are referred to as the minimum operating level. The minimum operating level is closely related to the capacity and efficiency of the supply system. In 1979 the National Petroleum Council estimated the minimum operating level for distillate stocks at 125 million bbls. However, the reduction in refining capacity due to lower demand, and particularly the closing of smaller, less efficient refineries, has probably reduced the minimum operating level to around 100 million barrels—a level almost reached in both 1982 and 1983 with no interference in supply.

Seasonal distillate stocks, along with refined product imports, have traditionally provided the additional distillate supply needed to satisfy peak heating season demand. The decrease in the seasonal variation of total distillate demand has reduced the seasonal variation in distillate stocks relative to the average stock level. The reduction in just the seasonality of distillate demand, irrespective of average demand levels, has reduced the peak seasonal stock level by about 20 million barrels from mid-1970's levels.

Imports of refined product, along with stock withdrawals, have been an important part of peak season distillate supply. In the late 1970's, distillate imports averaged nearly 300 mb/d during the heating season. However, the importance of imports has declined along with demand levels and, as product exports have increased, exports actually outstripped imports. For example, exports were actually 16 mb/d greater than imports during the past winter. Net imports are currently running at only a few thousand b/d, due to continued high exports, but distillate is readily available for importation in world markets. Additionally, current exports of about 80 mb/d could be reduced if demand conditions warrant.

If production of distillate during the heating season supplies all but 200 mb/d of current demand, and if net distillate imports are zero, a total of about 40 million bbls. would be needed from seasonal inventories (200 mb/d x 182 days = 36.4 mmbbl). Adding this to the minimum operating level of 100 million bbls. yields an estimate of pre-season minimum distillate stocks of 140 million bbls.

HOLDING COSTS VERSUS PRODUCTION COSTS

Although refiners now have the capacity to supply peak season demand from current production, seasonal stocks still serve an important role in balancing supply with demand. There are costs associated with high levels of distillate production during the heating season, due to low levels of production during the non-peak periods, and from holding seasonal inventories. The costs of

holding inventories and seasonal production costs will vary with each refiner, making it impossible to determine exactly what the optimal combination of production and stocks will be. However, it is possible to tell whether there is any shift in the relative costs between holding inventories versus current production.

The largest component of holding costs has become, in recent years, the cost of money (interest rates) or the cost of foregone opportunities due to the capital invested in extensive inventories. And, while nominal interest rates have declined recently, real interest rates remain high due to the reduction in the rate of inflation. Table II illustrates how the costs of holding inventories have increased in recent years.

TABLE II
ESTIMATED HOLDING COSTS FOR DISTILLATE INVENTORIES
in cents/barrel/day

Season	Average Prime Interest Rate	−	Change in Consumer Prices	=	Real Interest	×	$/bbl. Prices	=	Holding Costs cents/day
1977-1978	7.67		6.7		0.97		15.29		0.0406
1978-1979	10.81		10.3		0.51		17.30		0.0242
1979-1980	15.08		15.3		−.22		30.95		−0.0187
1980-1981	16.73		11.9		4.83		38.77		0.513
1981-1982	17.01		5.5		11.51		40.57		1.279
1982-1983	11.96		0.8		11.19		37.84		1.160

Source: Dept. of Energy and Dept. of Commerce. Note: holding costs as in the above formula would result in "dollars per year", for convenience the product is placed on a "per day" basis. Interest rates represent rates during the fourth quarter of the year. Change in CPI represents annual rate of change during the fourth quarter.

It is easy to see that storage costs have increased dramatically in recent years due to the high cost of money.

In addition, the cost of physical storage, while currently not as great as the interest cost, is significant and has been increasing in recent years. Estimates of physical storage costs currently range from about $2.00 to about $3.50 per barrel per year, or about 0.5 to 1 cents per day.

Refiners must balance production and yields with anticipated demand levels for the entire product slate in such a way as to minimize costs while sustaining production of the premium products. In practice, linear programming techniques are used to obtain the optimum solution to the problem, a matter which is beyond the scope of this examination. Our concern here is with the trade-off between the costs of inventory building and the costs of production during the current period.

Distillate fuel production capacity is a function of a number of factors, including refinery input capacity, the type of crude oil refined, and the demand for distillate and other products, particularly gasoline. Production costs can be separated into variable costs and fixed costs. Variable costs include costs which vary with the amount of production, such as crude oil costs, refinery operating costs, and associated product costs.

Fixed costs are related to the return required on the investment in the refining and distribution system and other items, such as general overhead, that do not vary with the level of operations.

Associated product costs are those related to the physical constraints of the refining process. To increase total distillate production, it is necessary to either increase crude oil runs or increase the distillate yield from each barrel of crude refined. *Ceterus paribus,* increasing crude oil input increases the production of all products, while increasing distillate yield means reduced production of other products, including gasoline, although there is generally not a one-to-one tradeoff. Thus, costs are incurred either in storing excess product or profits are foregone on the sales of products not produced.

Associated product costs insure that there will always be some seasonal build-up of inventory levels rather than satisfying demand with current production. Given the rather narrow range of profitable product yields and the seasonal patterns of product demand, distillate production during the off-season must, therefore, be higher than consumption levels, leaving some product available for storage. The current surplus of refining capacity gives refiners more flexibility to vary input levels and yield patterns.

Because physical capacity was formerly insufficient to supply peak season distillate demand, the cost of supplying peak season demand with current production would necessarily have had to include the cost of sufficient refining capacity to make up the shortage. Fortunately, from a supply standpoint, low off-season demand allowed refiners to build and store product for peak season use.

As shown earlier, refinery capacity is now able to supply most, if not all, peak season demand from current production. This reduces, if not eliminates, the refinery capacity costs from the production cost equation. In fact, given current low utilization rates, higher levels of input and production can mean a decrease in overall costs-per-unit due to the usually increased efficiency at higher utilization rates. And, by moving production closer to the time of purchase, holding costs can also be reduced. The effect this shift has had on the seasonality of distillate production can be seen in the change in the seasonal factors in recent years (Exhibit II).

The capacity to satisfy peak season demand with current production is not in itself a sufficient reason to pursue such a supply program. There are costs associated with high levels of production or high distillate yields which may be greater than the costs of holding inventories, and these costs differ for each refiner. However, it is clear from the analysis that there has been a shift in the relative costs of holding seasonal inventories versus the costs of satisfying demand with current production.

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CONCLUSION

Changes in the structure of distillate demand, combined with changes in demand and in minimum operating level, have reduced peak season stock levels by at least 40 million barrels from late 1970's levels. The relative increase in refining capacity versus distillate demand has contributed to an even larger decrease in peak inventory requirements. It is possible for refiners to supply all but about 200 mb/d of demand from production, leaving seasonal stocks to supply only about 40 million barrels for the heating season.

In 1982, low distillate stock levels in July and August may have contributed to some concern about the availability of adequate heating fuel for the upcoming winter. Severe weather was forecast for much of the country, and economic activity was expected to increase in the fourth quarter. However, it soon became apparent that operating conditions in the distillate supply system had changed, that winter weather was not as severe as forecast, and the economy was still sluggish. The markets then recognized that then current inventories were more than adequate to fill requirements, and prices in these markets dropped. Despite this experience, some have expressed concern about the adequacy of distillate inventories, but, as this paper demonstrates, this concern is unwarranted.

There is always the possibility that stocks in localized areas may not be available due to logistical or transportation difficulties as a result of severe winter weather. For these reasons it is important for regional distributors and for consumers to maintain normal levels of product stocks to prevent runouts or unnecessary drains on the supply system.

While obviously the severity of the upcoming winter and the strength of the economic recovery will significantly affect the level of distillate demand, available refinery capacity is adequate to meet a significantly higher level of distillate demand than is forecast. Thus, the role of distillate inventories at the primary level as a major component of supply has been reduced, and the role of distillate imports has been all but eliminated.

EXHIBIT I

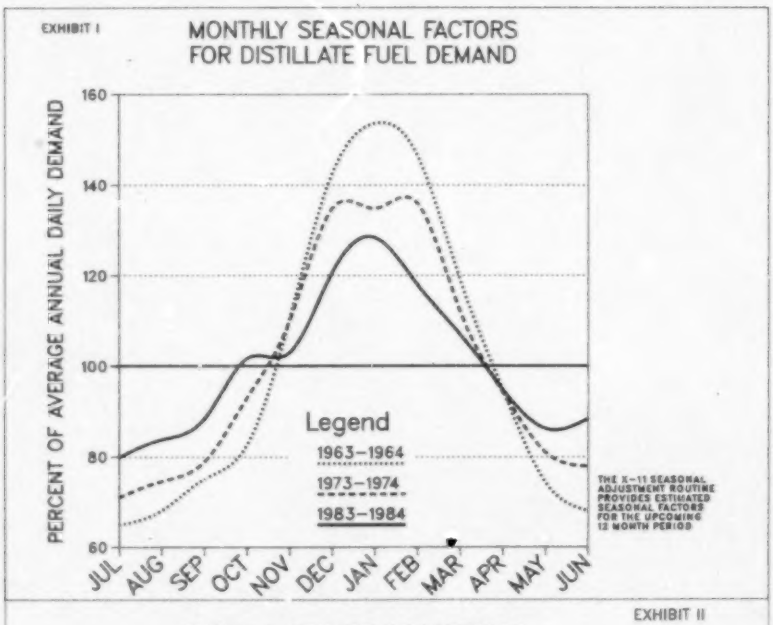
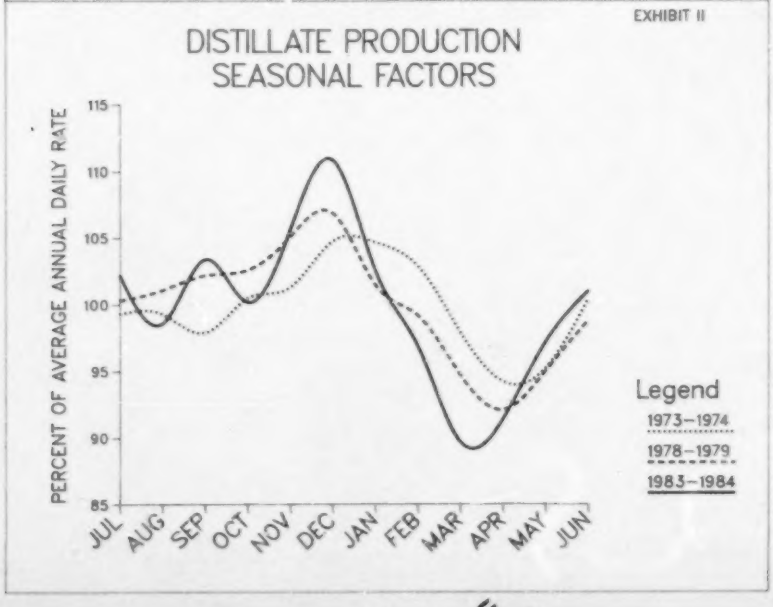


EXHIBIT II



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American Petroleum Institute
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Washington, D.C. 20005

Monthly Statistical Report

Prepared by the Statistics Department

Vol. 7, No. 9

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SEPTEMBER 1983

ESTIMATED MONTHLY PETROLEUM SUPPLY BALANCE

SUMMARY

As evidence of a strong economic recovery continued to accumulate, total domestic products supplied advanced about 0.5% in September and 1.3% during the third quarter over last year's levels. As shown in attached Exhibit I, increases in light products were mainly responsible for the third quarter advance.

Crude oil production has been essentially stable all year. The upward surge in imports gathered momentum during the past three months. This development is primarily the result of improving product demand at a time when inventories, seasonally adjusted, have stayed at roughly the same level for a number of months, in contrast to decreases last year.

Drilling activity indicators showed mixed results. The rig count continued to increase, rising about 11%, seasonally adjusted, during the third quarter over the prior quarterly period, though continuing to lag last year's levels. Wells reported drilled fell approximately 14% in the third quarter, some three percentage points above the year-to-year decline rate experienced in the first half of the year. The seismic crew count showed a slight increase.

PRODUCTS SUPPLIED[1/]

Gasoline supplied levels continued to be in plus territory during September and, for the quarter as a whole, advanced 154 MBD (2.3%) over year-ago levels. Gasoline prices, adjusted for inflation, fell about 5% compared with year-earlier levels and are down some 19% since their peak in early 1981, even when the roughly 6¢ increase in federal, state, and local taxes is included. The continued downdrift in gasoline prices, the effects of higher real disposable income, and a generally favorable economic climate, have, during the past several months, more than offset the long-term impact of the substantial 1979/1980 price increases. As Exhibit II shows, gasoline demand, down minimally in 1982 from the prior year, has been improving in 1983, with the third quarter, on a deseasonalized basis, almost 3% above 1982's last quarter.

Unleaded gasoline's market share in September, at 55.3%, is about three percentage points above year-earlier levels, a year-to-year rate of advance that has replaced the prior 5-6% annual advance in market share as the norm. While car sales so far this year are well ahead of last year's extremely low levels, the impact on total car fleet composition is small. However, improving fuel efficiency of recent-model-year vehicles and lower scrappage rates continue to hold the market share advance of unleaded gasoline below the level of the seventies.

Though below last year for September and 1983 to date, distillate supplied levels were about 5.3% ahead during the third quarter. Elements of distillate demand especially sensitive to changes in the economy, such as railroad and truck traffic, started to recover from prior deficits in late spring and experienced a substantial advance during the third quarter. The resultant increases in the railroad and on-highway sectors accounted for most of the increase in distillates supplied. An article dealing in greater detail with changes in the structure of distillate demand follows this month's "Estimated U.S. Petroleum Balance."

Residual fuel oil supplied fell 100 MBD (7.0%) in September and 158 MBD (10.7%) for the third quarter as a whole, compared with corresponding 1982 levels. However, residual fuel oil supplied levels have held relatively steady on a deseasonalized basis since spring. Available data indicate that this stability is created, in the main, by the electric utility and bunker fuel sectors where, in recent months, residual fuel oil demand has been relatively steady and year-to-year deficits minimal. The strength of the economic recovery, however, is not reflected in residual fuel oil levels in the industrial sector. This may be due, at least in part, to the recent widening of the residual fuel oil/natural gas price gap in a sector where dual-fuel capability is high. Residual fuel oil prices have been rising since spring, while natural gas prices have, in recent months, been relatively stable.

Kerosene jet fuel deliveries rose about 2.1% during the first seven months of the year over the comparable 1982 period. "Miles flown" in that time period showed a 4.8% increase. With air traffic reportedly continuing in a plus position over last year and kerosene jet fuel deliveries also ahead during August and September, the relative position of jet fuel deliveries versus "miles flown" is believed to have remained roughly the same as that of the first seven months. Fuel efficiency is apparently still increasing, but possibly at a somewhat slower pace than has been the case in prior years. Airlines have reportedly slowed acquisition of new, more fuel-efficient aircraft as a result of budgetary constraints.

(In millions of B/D)	SEPTEMBER ESTIMATES			YEAR-TO-DATE ESTIMATES		
	1983	1982	% Change	1983	1982	% Change
—Total domestic products supplied	15.1	15.0	0.5	15.0	15.4	(2.6)
—Motor gasoline supplied	6.7	6.5	2.1	6.6	6.6	0.6
—Distillate fuel oil supplied	2.5	2.5	(0.6)	2.6	2.7	(3.7)
—Residual fuel oil supplied	1.3	1.4	(7.0)	1.4	1.7	(18.3)

SUPPLY[1/]

Total supply showed a 680 MBD increase over September 1982 levels, with imports registering a 599 MBD increase and domestic supply rising 81 MBD.

Crude oil production has undergone very little change in 1983. The slight improvement that did occur is due in good part to higher production in the lower 48; North Slope production also grew somewhat, but production in offshore Alaska continued to drift downward.

The upsurge in imports which started in the spring has carried third quarter import levels to a more than 7% gain over last year's third quarter and 50% and 14% seasonally adjusted increases over first and second quarter 1983 levels, respectively. Import growth was directly related to the rise in product demand, as inventories have remained relatively stable over the past several months,on a deseasonalized basis, compared with sizable decreases last year.

The growth in exports since controls were lifted in October 1981 has been substantial. This development must be taken into consideration when the question of U.S. dependency on outside sources is considered. If imports are measured on a net basis (i.e. gross imports-excluding the strategic petroleum reserve-less exports), the United States dependency rate fell 15 percentage points, to 26%, so far this year versus the corresponding 1978 period, a drop about one-third greater than reflected by gross imports alone.

Inventories rose about 23 million barrels in September, more than half representing the roughly seasonal advance in distillate stocks. Distillate inventories equaled 62 days of supply at month end, considered fully adequate in the light of continuing high crude inventories and available refinery capacity. Gasoline inventories also rose, showing an above-average seasonal increase of seven million barrels in September.

Input to crude oil distillation units was about 300 MBD above last year. However, more than half the five percentage point rise in refinery utilization is attributable to the 700 MBD drop in operable capacity.

Rigs, on a seasonally adjusted basis, rose about 11% in the third quarter over the prior three-month period and, in September, were some 19% ahead of the April low. Wells reported drilled fell 4% in September and 14% for the third quarter, compared with year-earlier level. Exhibit III traces the changes in drilling activity since 1980. Wells reported drilled still showed increases in 1982, for both gas and oil wells over the prior year, though to a lesser degree than in the two preceding years. The full scope of the decline in drilling activity emerged in 1983. However, while the total number of wells drilled declined 12% so far this year from a year ago, the largest decline occurred in the gas well sector, where drilling fell 18%, more than twice the rate of the decline in oil wells drilled. The seismic crew count, widely accepted as a longer-range indicator of drilling activity, has risen some 12% since its March low. However, more than half of the increase is related to normal seasonal changes.

(In millions of B/D)	SEPTEMBER ESTIMATES			YEAR-TO-DATE ESTIMATES		
	1983	1982	% Change	1983	1982	% Change
—Total supply	16.5	15.9	4.3	15.6	15.7	(0.6)
—Crude production[2/]	8.7	8.7	(0.2)	8.7	8.6	0.3
—Crude oil imports[3/4/]	4.1	3.5	17.8	3.1	3.3	(7.0)
—Product imports	1.8	1.8	(1.4)	1.6	1.6	3.0

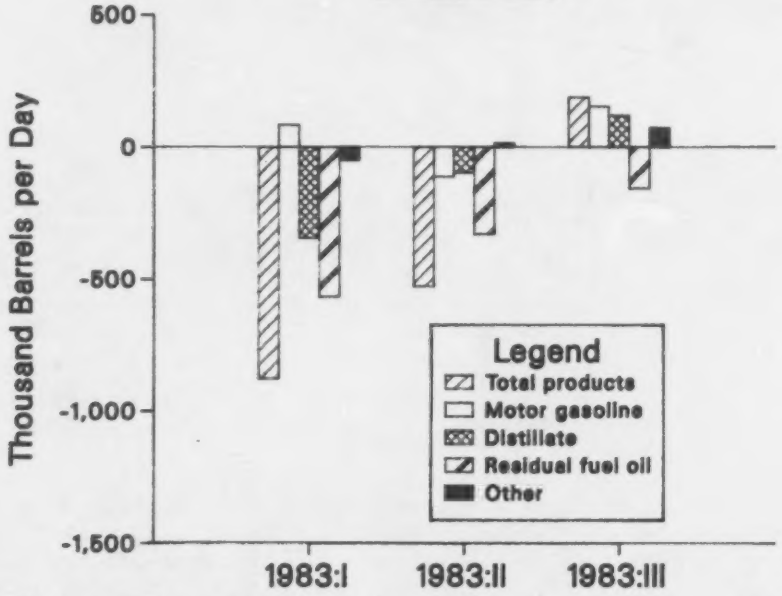
1/ Total supply, i.e., production plus imports adjusted for net stock change is equal to total products supplied from primary storage. Total products supplied from primary storage less exports is equal to total domestic products supplied. Information contained in this report is derived from information published in the API Weekly Bulletin and is based on historical analysis of the industry. All data reflect the most current information available to the API and include all previously published revisions.

2/ Includes lease condensate.

3/ Beginning with January 1977, the U.S. Department of Energy began reporting crude oil imports as of the date of importation. Previously, this data, with the exception of Canadian crude imports, was reported as of the date it was received at the refinery. This change may affect both the level of crude oil imports and crude oil stocks. API estimates of these data may, therefore, differ slightly from those of the U.S. Department of Energy.

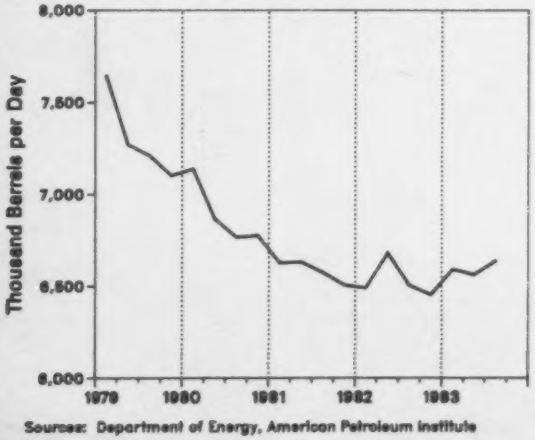
4/ API data do not include crude oil imported for the Strategic Petroleum Reserve (SPR) nor crude oil stocks held in the SPR (according to the U.S. Department of Energy, the SPR held approximately 361 million barrels as of September 30, 1983).

EXHIBIT I
CHANGE IN PRODUCTS SUPPLIED FROM PRIOR YEAR, BY QUARTER



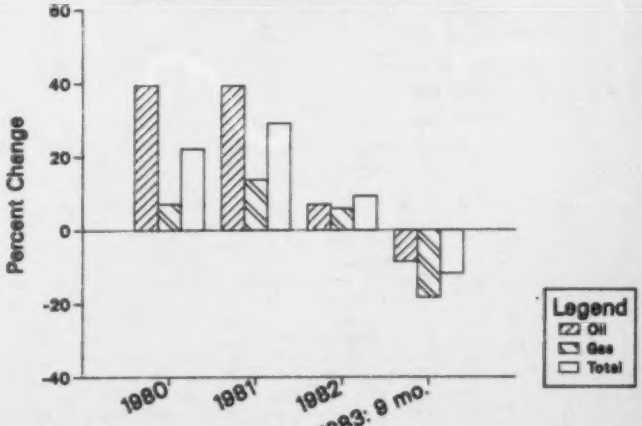
Sources: Department of Energy, American Petroleum Institute

EXHIBIT II
SEASONALLY ADJUSTED MOTOR GASOLINE SUPPLIED BY QUARTER



Sources: Department of Energy, American Petroleum Institute

EXHIBIT III
REPORTED WELL COMPLETIONS PERCENT CHANGE FROM PRIOR YEAR



Source: American Petroleum Institute

ESTIMATED UNITED STATES PETROLEUM BALANCE

(Daily Average in Thousands of 42 Gallon Barrels)

Supply/Products Supply From Primary Storage	SEPTEMBER			YEAR-TO-DATE		
	1983[1]	1982[2]	% Change	1983[3R]	1982[2]	% Change
Products Supplied:						
Total motor gasoline	6,665	6,531	2.1	6,593	6,551	0.6
Finished leaded motor gasoline*	2,978	3,127	(4.8)	2,991	3,149	(5.0)
Finished unleaded motor gasoline*	3,687	3,404	8.3	3,602	3,402	5.9
Naphtha-jet	189	193	(2.1)	206	210	(1.9)
Kerosine-jet	868	840	3.3	827	799	3.5
Distillate fuel oil	2,479	2,494	(0.6)	2,572	2,671	(3.7)
Residual fuel oil	1,326	1,426	(7.0)	1,404	1,719	(18.3)
All other oils[4]	3,691	3,849	(4.1)	3,497	3,678	(4.9)
Reclassified[5]	- 123	- 308	(60.1)	- 143	- 269	(46.8)
Total domestic products supplied	15,095	15,025	0.5	14,956	15,359	(2.6)
Exports	678	791	(14.3)	801	800	0.1
Total products supplied	15,773	15,816	(0.3)	15,757	16,159	(2.5)
Supply:						
Domestic production:						
Crude oil[6]	8,680	8,701	(0.2)	8,671	8,643	0.3
Natural gas liquids	1,501	1,518	(1.1)	1,538	1,537	0.1
Other supply[7]	481	362	32.9	693	631	9.8
Total domestic supply	10,662	10,581	0.8	10,902	10,811	0.8
Imports:						
Crude oil, total	4,121[10/]	3,497[10/]	17.8	3,088[10/]	3,320[10/]	(7.0)
Canadian	261	244	7.0	266	207	28.5
Other	3,860	3,253	18.7	2,822	3,113	(9.3)
Products, total	1,753	1,778	(1.4)	1,646	1,598	3.0
Residual fuel oil	692	872	(20.6)	696	771	(9.7)
Other	1,061	906	17.1	950	827	14.9
Total imports	5,874	5,275	11.4	4,734	4,918	(3.7)
Total supply	16,536	15,856	4.3	15,636	15,729	(0.6)
Stock change, all oils	+ 763	+ 40	XXXX	- 121	- 430	XXXX
Refinery Operations						
Input to crude oil distillation units	12,856	12,558	2.4	11,984	12,207	(1.8)
Operable capacity	16,294	17,001	(4.2)	16,710	17,522	(4.6)
Refinery utilization (%)[8]	78.9%	73.9%	6.8	71.7%	69.7%	2.9
Crude oil runs	12,552	12,146	3.3	11,692	11,811	(1.0)

Stocks (millions bbls.)	1983		1982[2]	% Change from ...	
	Sept. 30[9]	Aug. 31[9]	Sept. 30	Previous Month	Year Ago
Crude oil 10/	347.8	350.2r/	340.7	(0.7)	2.1
Unfinished oils	114.0	112.0r/	117.8	1.8	(3.2)
Total motor gasoline**	230.7	223.9r/	233.6	3.0	(1.2)
Finished leaded motor gasoline*	97.4	95.8	93.5	1.7	4.2
Finished unleaded motor gasoline*	93.6	87.3	97.6	7.2	(4.1)
Naphtha-jet	6.6	6.9	6.3	(4.3)	4.8
Kerosine-jet	34.4	32.7	33.3	5.2	3.3
Distillate fuel oil	154.4	141.9r/	161.2	8.8	(4.2)
Residual fuel oil	46.9	45.6	61.8	2.9	(24.1)
All other oils	200.5	199.2r/	181.4	0.7	10.5
Total all oils	1,135.3	1,112.4r/	1,136.1	2.1	(0.1)

1/ Based on API estimated data converted to a monthly basis.
2/ Source: U.S. Department of Energy.
3/ Source: January-July, U.S. Department of Energy, August-September, API.
4/ Includes crude losses.
5/ Beginning with January 1981, U.S. Department of Energy began using a new data collection system which encompasses a method to ascertain the amount of product reclassified during the production phase. So that there will be no double counting of these volumes, they are subtracted from total domestic products supplied.
6/ Includes lease condensate.
7/ Includes Unaccounted-for crude oil, Refinery input of other hydrocarbons, and Processing gain.
8/ Represents "Input to crude oil distillation units" as a percent of "Operable capacity."
9/ Derived by interpolating API weekly stocks data.
10/ Data do not include oil imported for the Strategic Petroleum Reserve (SPR) nor crude oil stocks held in the SPR.
R/ Revised.
* Included in motor gasoline.
** Includes finished leaded, finished unleaded, and motor gasoline blending components stocks.

ESTIMATED UNITED STATES PETROLEUM BALANCE

(Daily Average in Thousands of 42 Gallon Barrels)

Supply/Products Supplied From Primary Storage	3rd QUARTER		
	1983[1]	1982[2]	% Change
Products Supplied:			
Total motor gasoline	6,800	6,646	2.3
Finished leaded motor gasoline*	3,028	3,146	(3.8)
Finished unleaded motor gasoline*	3,772	3,500	7.8
Naphtha-jet	193	213	(9.4)
Kerosine-jet	860	792	8.6
Distillate fuel oil	2,367	2,247	5.3
Residual fuel oil	1,313	1,471	(10.7)
All other oils[3]	3,676	3,800	(3.3)
Reclassified[4]	- 125	- 273	(54.2)
Total domestic products supplied	15,084	14,896	1.3
Exports	715	796	(10.2)
Total products supplied	15,799	15,692	0.7
Supply:			
Domestic production:			
Crude oil[5]	8,658	8,664	(0.1)
Natural gas liquids	1,516	1,519	(0.2)
Other supply[6]	504	576	(12.5)
Total domestic supply	10,678	10,759	(0.8)
Imports:			
Crude oil, total	3,899[9/]	3,766[9/]	3.5
Canadian	297	245	21.2
Other	3,602	3,521	2.3
Products, total	1,858	1,602	16.0
Residual fuel oil	707	691	2.3
Other	1,151	911	26.3
Total imports	5,757	5,368	7.2
Total supply	16,435	16,127	1.9
Stock change, all oils	+ 636	+ 435	XXXX
Refinery Operations			
Input to crude oil distillation units	12,639	12,547	0.7
Operable capacity	16,473	17,126	(3.8)
Refinery utilization (%)[7]	76.7%	73.3%	4.6
Crude oil runs	12,364	12,154	1.7

Stocks (millions bbls.)	3rd QUARTER		
	1983[8]	1982[2]	% Change
Crude oil	347.8[9/]	340.7[9/]	2.1
Unfinished oils	114.0	117.8	(3.2)
Total motor gasoline**	230.7	233.6	(1.2)
Finished leaded motor gasoline*	97.4	93.5	4.2
Finished unleaded motor gasoline*	93.6	97.6	(4.1)
Naphtha-jet	6.6	6.3	4.8
Kerosine-jet	34.4	33.3	3.3
Distillate fuel oil	154.4	161.2	(4.2)
Residual fuel oil	46.9	61.8	(24.1)
All other oils	200.5	181.4	10.5
Total all oils	1,135.3	1,136.1	(0.1)

1/ Source: U.S. Department of Energy, July; August-September, API.
2/ Source: U.S. Department of Energy.
3/ Includes crude losses.
4/ Beginning with January 1981, U.S. Department of Energy began using a new data collection system which encompasses a method to ascertain the amount of product reclassified during the production phase. So that there will be no double counting of these volumes, they are subtracted from total domestic products supplied.
5/ Includes lease condensate.
6/ Includes Unaccounted-for crude oil, Refinery input of other hydrocarbons, and Processing gain.
7/ Represents "Input to crude oil distillation units" as a percent of "Operable capacity."
8/ Derived by interpolating API weekly stocks data.
9/ Data do not include oil imported for the Strategic Petroleum Reserve (SPR) nor crude oil stocks held in the SPR.
* Included in motor gasoline.
** Includes finished leaded, finished unleaded, and motor gasoline blending components stocks.

RECENT CHANGES IN THE STRUCTURE OF DISTILLATE DEMAND

SUMMARY

Distillate demand during 1982 was at the lowest levels since 1971; the average demand level of 2,671 MBD was more than 22% lower than 1978 demand. Distillate demand has continued to decline in 1983, though at a lesser rate, with average demand in the first nine months about 4% below the same period in 1982, although the third quarter was 5% higher. These decreases in demand reflect continuing changes in the structure of distillate demand.

Total distillate usage is usually segregated into two general categories, heating oil and diesel fuel use. Diesel fuel use can be further divided into transportation and stationary power usage. The increases in oil prices since 1978 have altered the competitive structure of the markets in which distillate fuels are used. Conservation and fuel switching have reduced heating oil demand, while increased use of diesel-powered trucks has helped transportation demand remain relatively stable. As a result, transportation use now represents the major portion of distillate demand, reversing the dominant role of heating use in total distillate demand. This shift from heating use to transportation use has had the effect of reducing peak seasonal demand levels and increasing off-season demand relative to average demand levels.

This article will examine the major changes in distillate demand by end-use sector on an annual basis through 1982, and, applying changes in activity levels to monthly distillate supplied data published by DOE, will attempt to estimate what demand by sector may have been for the first half of 1983.

DISTILLATE DEMAND BY END-USE SECTOR

The Department of Energy has been providing estimates of distillate demand for eleven end-use sectors on an annual basis in the report "Deliveries of Fuel Oil and Kerosene". Beginning in 1979, the sectors detailed separately include residential use, commercial, industrial, farm, oil company, electric utility, railroad use, vessel bunkering, on-highway and off-highway use, and distillate use by the military. Prior to 1979, separate detail for residential, commercial, and farm use was not available, most of the use by these sectors having been aggregated into "heating" and "off-highway" uses.

It it possible to estimate monthly demand by end-use sector utilizing the information available on activity levels in each sector and a minimal number of assumptions about patterns of distillate demand. Monthly demand levels for 1982 have been derived from annual DOE estimates, while 1983 estimates are based on changes in activity levels from the same month the previous year.*

TRANSPORTATION USE

Distillate demand for heating uses has been declining in recent years while some transportation uses have increased significantly. Total transportation distillate increased from about 40% of distillate supplied in 1978 to almost 60% in 1982. The beginnings of economic recovery and unusually warm winter weather this year have helped sustain the trend toward diesel fuel representing a larger percentage of total distillate deliveries. For the first six months, we estimate that transportation distillates in 1983 accounted for 60% of distillate deliveries, compare with 55% in the same period in 1982 (see Table I).

TABLE I

DISTILLATE FUEL USE BY CATEGORY
(Percent of Total)

Year	Transportation	Stationary Power and Process Heat	Heating
1978	41	17	42
1979	51	13	36
1980	54	14	32
1981	57	14	29
1982	58	14	28
First Half			
1982	55	12	33
1983	60	11	29

Source: API estimates based on DOE "Deliveries of Fuel Oil and Kerosene."

Based on our estimates of consumption in the first half of the year, off-highway, military, and on-highway consumption of diesel fuel and other distillates have shown increases while the other sectors have declined by varying amounts. However, there is mounting evidence that, in the last few months, demand has turned around in the railroad, industrial, and bunkering sectors, compared with year-earlier periods.

On-highway distillate usage has increased about 600% since the early 1960's, and in itself accounted for 35% of distillate supplied in 1982, although demand declined slightly compared to 1981, mainly due to the recession. Better fuel economy of diesel engines compared to gasoline engines has contributed to a conversion of most heavy trucks and a growing number of

* As the monthly estimates most closely represent end-use consumption, some divergence from the product supplied figures is to be expected, as product supplied is measured at the primary level. One further difference from the DOE "Fuel Oil" report is that no attempt has been made to estimate demand in the "other" uses category.

medium and light trucks from gasoline to diesel. Oak Ridge National Laboratories estimates that diesel consumption by light trucks and cars will account for about 10% of on-highway diesel demand in 1983, compared to about 2% in 1979. During the first half of 1983, on-highway diesel fuel registered an apparent gain of 3.5% versus the first half of 1982, an advance closely approximating the 3% increase registered in truck tonnage as reported by the American Trucking Association (see Table II).

TABLE II

DISTILLATE USE BY SECTOR
(Thousand Barrels per Day)

Sector	1978	1979	1980	1981	1982	1st. Half 1982	1st. Half 1983	Percent Change
Heating	1460	na	na	na	na	na	na	na
Residential	na	741	621	541	495	571	508	-11.0
Commercial	na	273	252	216	207	215	213	- 0.9
Industrial	260	273	235	220	195	207	203	- 1.9
Farm	na	233	201	191	188	199	193	- 3.0
Oil Company	53	60	66	80	81	87	71	-18.4
Utilities	211	128	87	50	33	39	27	-30.8
Railroad	274	284	279	280	255	266	256	- 3.8
Bunkering	103	114	96	96	93	103	93	- 9.7
On-Highway	797	897	884	932	926	935	968	3.5
Military	56	51	52	49	42	42	44	4.8
Off-Highway	191	179	141	106	102	93	101	8.6

Source: 1978-1982 DOE "Deliveries of Fuel Oil and Kerosene", 1st. half 1982 and 1983 API estimates.

Distillate fuel use by the railroads and for vessel bunkering, totaling about 13% of distillate use, declined in 1982. Railroad use declined by 7.3%, while bunkering fell more than 17%. These declines are attributable to a slowdown in activity and a loss in efficiency due to the recession. Railroad revenue ton-miles for bulk cargo, representing a major portion of all rail traffic, declined 12% in 1982, and fuel efficiency, based on the number of ton-miles, declined more than 5%.

Off-highway diesel fuel, while not used for transportation in the same sense as on-highway or railroad use, is nonetheless used for motive power at and around construction sites, for logging, mining, and road building. This category of distillate use was particularly hard hit by the recession and high interest rates of the past several years. Off-highway use declined 43% between 1979 and 1982, and has gone from 5.4% to 3.8% of total distillate supplied. We estimate that for the first six months of 1983, off-highway diesel demand increased 9% compared to 1982, as lower interest rates and increased economic activity pushed up the level of commercial as well as residental construction.

Distillate fuel use on the farm is at least 80% diesel fuel and, while not used strictly for transportation, is essential for the planting, cultivation, and harvesting of the nation's crops and for livestock production. Although demand has declined 19% since 1979, the farm sector's share of distillate demand has remained relatively stable at 7% of total distillate demand.

The last sector utilizing distillate fuel for transportation purposes is the military. We believe that about 75% of military distillate use is for transportation purposes. We estimate that military distillate consumption during the first half of 1983 increased about 5% compared to 1982, based on the assumption that higher defense budgets permits more training and other fuel using activities.

HEATING USE

While distillate use for some transportation applications has been generally increasing since 1978, distillate use for space heating and process heating has declined dramatically. Distillate fuel is more expensive than some of the other fuels that can be utilized for space heating.

The DOE estimates that the number of residential users of distillate fuel as the main source of heat has declined from 16.9 millions in 1978-1979 to 11.3 millions in 1981-1982, a drop of 33%. The remaining distillate fuel users reduced their average annual consumption by about 20%, from 930 gals. to under 750 gals. The rate of fuel switching is likely to have fallen in the last year as distillate prices remained relatively stable and the price of natural gas rose due to the provisions of the NGPA.

The generally warmer weather experienced in many parts of the country in the past two winters, while not a structural change, has also had an impact on consumption of heating oil. We have estimated that warmer-than-normal weather reduced total distillate demand during the 1982-1983 heating season by about 100,000 b/d.

Warmer winter weather, as well as continued fuel switching, is also reflected in the estimated 11% consumption decline for the residential sector in the first half of the year. Colder weather in late March and April helped moderate the demand decrease, but late season departures from normal generally do not have the same impact as severe weather earlier in the season.

The commercial sector also uses distillate fuel for space heating, and there is evidence of conservation and fuel switching in this sector, too. Commercial use of distillate declined by 24% between 1979 and 1982, but only one-eighth of the total decline occurred between 1981 and 1982, much of it due to warmer weather.

Farm use of distillate fuel for heating purposes represents, at most, 20% of total farm use. While some fuel switching in this sector is possible, the logistics of supplying farmhouses and buildings would indicate that switching has probably been minimal.

STATIONARY POWER AND PROCESS HEAT

Distillate fuel use by the electric utility and oil company sectors to a large extent represents diesel use in stationary power applications. Electric utilities often used diesel power generators for peak load generation rather than undertaking expensive capital expansion of base load generating capacity. Nevertheless, those base-load increases that have taken place in the past several years have, in the face of stable or declining levels of electricity generation, been sufficient to cut distillate use by utilities 84% over the past four years. It should be noted that total electricity generation actually declined in 1982 for the first time in decades.

Distillate use by electric utilities in the first half of this year again registered the largest sector decline on a percentage basis, more than 32% compared to the 1982 period. It is likely that milder-than-normal weather contributed to the decrease, though most is due to a continuation of the trend away from the use of peaking units.

Oil company use of distillate is split between use for powering drilling rigs and production units, pipeline power, heating of facilities, and refinery processing heat. At least 50% of oil company consumption in the past few years has been in the form of diesel fuel for drilling rigs and production related activities. Oil company use of distillate has increased in the past several years, particularly as decontrol spurred drilling and production activities. Oil company use increased 20% between 1980 and 1981, but as drilling activity slowed in 1982, demand increased just one percent. Oil company use of distillates has begun to reflect lower levels of drilling and well completion activities, as well as the lower levels of product deliveries and refinery operations in the first half of 1983, declining almost 20%.

Industrial use of distillate is primarily for process heat, with only a small fraction required for facility heating. The combination of conservation efforts and the economic recession has reduced industrial distillate use by 28% since the peak in 1979; about one-third of the decline occurred in 1982.

CONCLUSION

Distillate fuel actually consists of several distinctly-different products competing against different alternate fuel sources. The oil price increases since 1978 have significantly altered the demand patterns for distillate fuel by changing the previous equilibriums between distillate and the alternate fuels available for use to each market. Heating and stationary power applications have declined in relative importance as price increases have spurred conservation and switching to less expensive alternate fuel sources. As a result, transportation demand for distillate has increased its relative share of total demand.